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ABSTRACT BOOK

# SESSION 1

## THE RESEARCH ZONE



#### Abstract No.: 11

**Title :** Jet-cold plasma treatment at air atmospheric pressure to accelerate healing of venous ulcers: a randomized clinical trial

#### Introduction:

To evaluate the efficacy and safety of air-based cold atmospheric plasma jet (CAPJ) therapy for chronic venous leg ulcers (VLU), compared to standard of care (SOC).

#### Materials and Methods:

This is a prospective, randomized, controlled, open-label, multicentre clinical trial. 60 adult patients with non-healing VLUs were randomized to receive either CAPJ therapy twice weekly for 10 weeks or SOC. The primary outcome was the percentage reduction in wound area at weeks 4, 9, and 17. Secondary outcomes included granulation tissue formation, microbial burden (qualitative and quantitative), pain (VAS), aesthetic satisfaction, and adverse events. Data were analysed by intention-to-treat.

#### Results:

Both groups exhibited significant wound area reductions over time. Although the CAPJ group showed a greater mean reduction (-72.9% vs. -56.7% at week 17), the difference was not statistically significant ( $p = 0.30$ ). Complete healing was observed in 42.9% of CAPJ patients vs. 30.4% with SOC ( $p = 0.361$ ). CAPJ significantly decreased microbial burden immediately after application at weeks 0 and 4 ( $p < 0.05$ ). Pain scores improved comparably in both groups, and aesthetic satisfaction was high without significant inter-group differences. No serious adverse events were attributed to air CAPJ. Transient pain-related sensations were the most frequent treatment-related effects.

#### Conclusions:

Air CAPJ therapy achieved clinically relevant wound area reduction, rapid and intense antimicrobial action, and high patient acceptability without increased adverse effects. These findings support CAPJ as a safe, non-invasive adjunct for chronic VLU management.

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#### Abstract No.: 133

**Title :** High-throughput molecular characterization of the microbiome in breast implant associated anaplastic large cell lymphoma and peri-implant benign seromas

#### Introduction:

Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) is a mature T-cell lymphoma linked to textured breast implants. A leading hypothesis suggests that chronic inflammation, combined with immunological and genetic factors, drives the pathogenesis of this condition. Regarding the etiology, various triggers have been identified, such as friction, gel bleeding, and biofilm. Studies investigating bacterial biofilms on breast implant capsules have produced conflicting results, particularly regarding the presence of *Ralstonia* spp. on BIA-ALCL capsules. Our study aims to shed light on the eventual role of biofilm as a trigger for BIA-ALCL.

#### Materials and Methods:

We analyzed microbiota profiles in seroma samples from 10 BIA-ALCL patients and 12 patients with non-neoplastic effusion subclassified into acute-, mixed-, and chronic-type based on cellular composition. We employed two metagenomic approaches were: 16S rRNA gene sequencing and Nanopore sequencing with the "What's in My Pot?" (WIMP) taxonomic classifier. Our analyses included alpha and beta diversity metrics, and comparisons of Gram status and oxygen requirements.

#### Results:

16S rRNA data revealed significantly higher evenness in BIA-ALCL compared to acute-type seromas (Inverse Simpson index,  $p = 0.0074$ ). WIMP data showed significantly higher richness in BIA-ALCL ( $p = 0.012$ ) than acute seromas. Notably, the Burkholderiaceae family, which includes *Ralstonia* spp., was more abundant in some of the benign seromas according to the 16S rRNA sequencing. We observed no significant differences in Gram stain between BIA-ALCL and benign samples using either method. However, non-aerobic bacterial families enriched in BIA-ALCL cases only when analyzed with the WIMP pipeline.

#### Conclusions:

Using two next-generation sequencing methods, we found no single bacterial species or family specifically associated with BIA-ALCL. BIA-ALCL samples showed a higher abundance of non-aerobic bacteria, which aligns with prior evidence of a hypoxic (low-oxygen) tumor environment. Our findings suggest that while bacteria may foster chronic inflammation, BIA-ALCL should not be attributed to a specific infectious cause.

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#### Abstract No.: 189

**Title :** Preoperative Prediction of Incisional Hernia Using CT Imaging and Hybrid Intelligence Integrating Deep Learning and Optimal Biomarker Methods: A Pilot Study

#### Introduction:

Prior research using imaging-derived features with machine learning (ML), deep learning (DL), and optimal biomarker (OBM) methods has shown stepwise improvements in predicting incisional hernia (IH). This study extends on previous work using a hybrid intelligence (IH) framework integrating natural intelligence (NI) and artificial intelligence (AI), enabling hand-crafted image features to be embedded into DL predictive models (H-DL) and DL-derived features to inform OBM (H-OBM) feature selection and prediction.

#### Materials and Methods:

Preoperative abdominopelvic CT scans from 420 colorectal surgery patients (157 IH, 263 non-IH) were segmented into seven strictly defined anatomical regions, generating 1,065 image-based features including linear, volumetric, intensity, and textural measurements. Thirty-four clinical variables were included. Case-controls were matched on age, sex, and surgical approach. DL, OBM, H-DL, and H-OBM models were evaluated using combinations of 34 clinical [continuous (Cn) and categorical (Cat)], 1,065 hand-crafted image-derived (I), 1,024 DL-derived, and 1,099 OBM-derived features.

#### Results:

OBM+Cn+Ct, OBM, and OBM+I+Cn+Ct methods all achieved similar predictive accuracies (67.9%, 67.7%, 68.2%, respectively). The H-OBM+DL method achieved the highest accuracy (82.1%) while maintaining some interpretability of the top predictive features. Accuracy modestly decreased with the addition of other variables (H-OBM+DL+I+Cn+Ct = 81.3%) as well as with limiting DL features to the top 126 (H-OBM+DL(126)+I+Cn+Ct = 80.6%).

Accuracies varied with primary DL methodologies and explainability of features was naturally lost. The DL method achieved an accuracy of 77.5%. The addition of all OBM-selected features decreased performance (H-DL+DL+I+Cn+Ct = 75.9%). However, limiting OBM-selected features to the top 128 improved performance (H-DL+DL+I+Cn+Ct(128) = 79.0%). Conversely, limiting DL-derived features to the top 128 decreased accuracy (H-DL+DL(128)+I+Cn+Ct = 71.9%).

#### Conclusions:

Integrating OBM's effective and explainable optimal feature selection with DL's predictive power improves IH prediction, with H-OBM demonstrating the strongest performance. This methodology is broadly applicable and can be readily adapted to other biomarker-driven clinical prediction tasks.

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#### Abstract No.: 322

**Title :** Axon Counts and Long-term Clinical Outcomes in Patients with Cross-Face Nerve Grafts with Extended Timeframe

#### Introduction:

Cross-face nerve grafts (CFNG) restore facial expressions following facial paralysis (FP). It is unclear whether time between initial CFNG placement (stage one) and coaptation (stage two) affects axon counts, CFNG viability and function of the CFNG. We aimed to investigate axonal re- or degeneration in CFNGs over time and to examine the relationship between axon count and clinical outcome.?

#### Materials and Methods:

Intraoperative biopsies of sural nerve CFNGs, connected to healthy lower lip depressor branches of the facial nerve, were collected at two respective time points >9-12 months apart. Nerves were epoxy embedded, sectioned and stained with methylene blue. Retrospective chart review was performed. Axon counts and myelination status were analyzed using ImageJ and GraphPad Prism. Data are presented as mean(±SD) and P<0.05 was considered statistically significant.?

#### Results:

Five patients underwent CFNG biopsies. Age at onset of FP was 28.1(±23.2) years. The first biopsy was taken 1.5(± 0.4) years after stage one. Time between first and second CFNG biopsy was 2.0(± 1.3) years. Axon counts remained stable between first and second biopsy (3487.2(± 2774) vs. 2575.8(±1394.7); P= 0.89), with the second biopsy being 3.7(±0.8) years after initial CFNG. Myelination was also comparable (36.1%(± 22.9) vs. 38.5%(± 32.9); P= 0.89), with two patients showing increased myelination over time. Two patients with long-term clinical follow-up had axon counts of 1757(±42.6% myelinated) and 4968(±92.6% myelinated) at second biopsy and showed improvement in lower lip depression at 2.0(±0.4) years post-second biopsy.

#### Conclusions:

Axon number and myelination status remain relatively stable after initial CFNG placement. Favorable long-term results suggest decision to perform coaptation surgery should not be limited by time since initial graft placement.

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#### Abstract No.: 351

**Title :** Dual-Action PLGA/PCL Nanofiber Barrier Delivering Methylprednisolone to Prevent Peritendinous Adhesion While Protecting Tendon Integrity

#### Introduction:

Peritendinous adhesion after tendon repair remains a major cause of impaired motion and reoperation. Physic barriers and single-layer biodegradable membranes have shown limited success in preventing fibrosis or preserving tendon strength. Corticosteroids such as methylprednisolone (MP) reduce adhesion formation but risk tendon atrophy. A bilayer system enabling directional, localized MP delivery while shielding the tendon from steroid exposure may overcome these limitations.

#### Materials and Methods:

A bilayer electrospun scaffold was fabricated with an outer PLGA layer loaded with 25 % MP (w/w to PLGA) for sustained release and an inner PCL layer facing the tendon to block steroid diffusion. Characterization included SEM, FTIR, tensile testing, water-contact angle, in-vitro release kinetics, and eight-week biodegradability. In vivo, 42 Wistar rat Achilles tendons were assigned to sham, repair only, neat PLGA/PCL, and 25 % MP-PLGA/PCL groups. At four weeks, macroscopic adhesions, histopathology (inflammation, vascularization, fibrosis, mucin, healing score), biomechanics, tendon length, and glucose levels were assessed.

#### Results:

The nanofibers showed uniform morphology, 2.56 MPa tensile strength, and non-Fickian diffusion-controlled release (Korsmeyer-Peppas  $R^2 = 0.99$ ). After eight weeks, weight loss was 55 % for MP-PLGA/PCL versus 88 % for neat-PLGA, demonstrating moderated degradation. In vivo, group 4 exhibited significant reductions in adhesion length, grade, and fibrosis versus group 2 ( $p < 0.01$ ), with tendon length (5.64 mm) comparable to sham ( $p > 0.05$ ). Biomechanical strength was preserved, and no systemic glucose variation occurred. Unlike neat PLGA/PCL, no abscess or mat exposure was observed. Histology confirmed organized collagen alignment, minimal fibrosis, and limited inflammatory infiltration.

#### Conclusions:

The 25 % MP-PLGA/PCL nanofiber barrier provides dual mechanical and pharmacologic protection –sustained anti-fibrotic action while shielding tendons from steroid-induced atrophy. Its controlled degradation, absence of systemic effects, and preserved biomechanics demonstrate strong translational promise as a localized, bioresorbable anti-adhesion strategy in tendon surgery.

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#### Abstract No.: 352

**Title :** Advancing Temporomandibular Joint Reconstruction: A Cadaveric Study on the Design of the Fourth Chondrocostal Joint Flap

#### Introduction:

The free fibula flap is the gold standard for reconstructing mandibular defects caused by trauma, tumors, dysplastic diseases, osteoradionecrosis, and atrophy. However, it has not yet been shown to be the ideal method for condylar reconstruction. This anatomical study proposes a surgically pragmatic approach to temporomandibular joint and condylar reconstruction by defining the vascularity of the chondrocostal joint.

#### Materials and Methods:

One fresh frozen and six formalin-fixed cadavers were dissected to assess the suitability of the 4th rib for the planned procedure. Bilateral internal thoracic vessels and branches surrounding chondrocostal joints were identified. The 4th chondrocostal joint flap was dissected with care to preserve the joint surface and perichondral vascularity. Digital calipers were used for precise measurements of maximal flap and pedicle length. The vascular anatomy was further explored in a fresh frozen cadaver through fluoroscopic imaging by radiopaque latex injection. The flap's suitability for temporomandibular joint reconstruction was tested by surgically removing the original temporomandibular joint from the cadaveric skull and positioning the chondrocostal joint flap in the resultant defect.

#### Results:

The dominant pedicle to the fourth chondrocostal joint was shown to be the perforators of the internal thoracic vessels. The mean pedicle length was 4.7 cm, which was sufficient to reach recipient vessels in the neck. The compatibility between the fourth chondrocostal joint and the glenoid fossa was confirmed.

#### Conclusions:

This study demonstrates that the fourth chondrocostal joint flap is a promising free flap for temporomandibular joint and condylar reconstruction. It offers ideal pedicle positioning, length, and vascular size match at the anastomosis, making it a suitable technique for reconstructing the challenging temporomandibular region. This approach adds a new option to the reconstructive surgeon's armamentarium, addressing previous limitations in condylar reconstruction.

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#### Abstract No.: 386

**Title :** Intraoral Cross-Facial Nerve Grafting for Facial Reanimation: Anatomical Feasibility and Clinical Application

#### Introduction:

Cross facial nerve graft (CFNG) is a key procedure in facial reanimation surgery. A preauricular incision is usually required to access terminal branches of the healthy facial nerve, enabling axonal regeneration to a spontaneous smile. In 2018, Jeong et al. described a fully intraoral CFNG with submucosal tunnelling and transoral access. To date, no anatomical study has validated this approach. This study aimed to standardize the surgical technique, assess correspondence of branch selection between intraoral and preauricular approaches in cadavers, and present the first institutional experiences with the intraoral CFNG approach.

#### Materials and Methods:

Facial dissections were performed on ten hemifaces from five donated cadavers. Using a dental retractor to expand the surgical field, the midline of the upper gingiva was marked, followed by a vertical mark on the buccal mucosa 2.5 cm lateral to the midline. A vertical incision was made, and the soft tissue dissected vertically to 1 cm depth, then angled toward Zuckerk's point. Upon reaching the anterior border of the masseter muscle, terminal branches of the facial nerve (buccal and zygomatic) and the parotid duct were identified. Subsequently, a senior surgeon experienced in facial reanimation blindly identified the terminal branches through a standard preauricular incision. Correspondence between structures identified by both approaches was evaluated.

#### Results:

The correspondence rate between intraoral and preauricular approaches was 92%. None of the misidentified structures corresponded to the parotid duct. Mean distances were: midline to anterior masseter border 57.1 ± 4.5 mm; midline to intraorally dissected branches 72.1 ± 5.9 mm; tragus to Zuckerk's point 56.2 ± 4.4 mm; tragus to intraorally dissected branches 64.8 ± 7.6 mm.

#### Conclusions:

The intraoral CFNG approach shows high anatomical correspondence with the preauricular method, a shorter reinnervation distance, negligible risk to the parotid duct, and avoids visible scarring. Initial institutional experience supports its feasibility and reproducibility in surgical practice.

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#### Abstract No.: 394

**Title :** Isolation and characterization of exosomes in lipospiarte: new perspectives in plastic surgery

#### Introduction:

Adipose tissue plays a central role in regenerative medicine due to its stromal-vascular components and extracellular vesicles (EVs). While the solid phase of lipospiarte is commonly used for fat grafting, its liquid fraction is usually discarded despite potentially containing bioactive exosomes with regenerative capabilities. The present study aimed to isolate, characterize, and test the biological activity of exosomes derived from different fractions of non-centrifuged lipospiarte.

#### Materials and Methods:

Ten patients (4 males, 6 females; mean BMI 28.5 ± 3.2 kg/m<sup>2</sup>) underwent abdominal or femoral lipofilling using a modified Coleman technique. The non-centrifuged lipospiarte was divided into liquid, stromal-corporcular, and adipose fractions, ultrafiltered (Amicon Ultra 100 kDa), and analyzed by TRPS, TEM, and flow cytometry for CD9, CD63, and CD81. Human dermal fibroblasts were exposed to 1 × 10<sup>10</sup> EVs/mL and cell viability (MTT assay), internalization (PKH27 labeling), and genezy expression of regenerative target genes. Clinically, reinfusion of non-centrifuged lipospiarte improved graft retention, skin elasticity, scar pain, and healing of chronic ulcers, without infectious or nodular complications.

#### Conclusions:

The liquid fraction of lipospiarte represents a rich and functional source of exosomes capable of modulating fibroblast activity and supporting tissue regeneration. Preserving and reinfusing the integral fluid fraction may enhance paracrine signaling, offering a simple, cell-free, and effective strategy for regenerative lipofilling and future applications in plastic and reconstructive surgery.

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# SESSION 2

## MICRO & SUPER MICRO MARIO

Abstract No.: 89

**Title :** Diagnostic Accuracy of Ultrasound for Localizing Lymphovenous Anastomosis Sites in Lymphedema Surgery

**Introduction:**

Preoperative vessel mapping is critical for successful lymphovenous anastomosis (LVA) in supermicrosurgical lymphedema treatment. Indocyanine green lymphography is common but limited by poor depth penetration and reduced visibility in advanced disease. This study aimed to evaluate the accuracy of contrast-enhanced ultrasound (CEUS) for identifying LVA sites. CEUS is independent of tissue thickness, vessel size, depth, and distance (all  $p > 0.17$ ). Ultrasound diameters showed minimal bias compared with intraoperative measurements ( $+0.13$  mm (95% CI: 0.09, 0.17) for lymphatics;  $-0.10$  mm (95% CI:  $-0.17$ ,  $-0.04$ ) for veins). Mean total examination time was  $34.7 \pm 9.6$  minutes; per-image analysis averaged  $7.2 \pm 2.3$  minutes and was unrelated to confirmation rate ( $p = 0.74$ ).

**Conclusions:**

Preoperative ultrasound enabled accurate, reproducible localisation of LVA sites with strong anatomical agreement and consistent performance across participant and anatomical variables.

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Abstract No.: 101

**Title :** The Limits of Microsurgery: Proprioceptive-visual-motor accuracy and latency thresholds preclude supra-microsurgical applications.

**Introduction:**

Expanding the frontiers of microsurgery to resolve micrometric structures opens a clinically unbound horizon. Advances in operator-independent optical and robotic aids amplifying human micromotion fail to address intrinsic operator-dependent limitations such as proprioception, a sixth human sense critical to microsurgical skills, compounded by visual inputs and motor outputs.

**Materials and Methods:**

Calibrated video recordings of microendoscopic trajectories were analyzed for trainees ( $n=10$ ) and experienced surgeons ( $n=3$ ). Path 2D coordinates were mapped using direct linear transformation. Each  $3000 \mu\text{m}$  path was defined as: start and end offsets to target, vector direction, velocity, and correction latency. Means, SD and range described precision and accuracy.

**Results:**

Trainees exhibited wider starting positions and struggled with irregular directional and velocity control (Fig 1). Both groups showcased similar correction continual patterns (5-13 degrees every  $300\text{-}600$  ms) (Fig 2), consistently missing the target (Fig 3). Trained surgeons achieved end offset precision of  $96.5 \mu\text{m} \pm 24.7$ , range 256, compared to trainees ( $288.70 \mu\text{m} \pm 32.72$ , range 479).

**Conclusions:**

Training leads to improved initial alignment, path uniformity, precision and accuracy. Arguably, expert hands fail to effectively interpose sutures amid a  $500 \mu\text{m}$  gap. This limit appears associated to an operator inherent proprioceptive-visual-motor continual response, and support our aspiration to identify obstacles to microsurgery advancement, new training methods to overcome them, and guidelines to improve optical and robotic aids.

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Abstract No.: 148

**Title :** Portable 3D Scanning for Upper and Lower Limb Lymphedema in the Clinical Setting: Posture Optimization and Clinical Equivalence to the Circumferential Method

**Introduction:**

Accurate, rapid, and reproducible limb-volume measurement is vital for diagnosing and monitoring lymphedema. Common methods include water displacement, circumferential tape measurements with a truncated cone volume model, infrared optoelectronic perometry, and bioimpedance spectroscopy (BIS), with the circumferential method widely adopted for its accessibility and low cost. Nevertheless, circumferential calculations are operator-dependent and time-consuming. Portable 3D scanners provide mesh-based measurements and visual quality control (QC), but standardized clinical workflows and their equivalence to circumferential methods remain unclear. We evaluated clinical agreement for  $\Delta$ -volume (%) and produced a clinical-ready standard operating procedure (SOP) plus a rapid circumferential calculator to standardize practice.

**Materials and Methods:**

This single-center prospective study enrolled 20 patients (10 upper-limb, 10 lower-limb) who underwent same-site circumferential measurement and portable 3D scanning (Revopoint Miraco Plus).  $\Delta 3D\%$  and  $\Delta \text{circ}\%$  were computed as ( $\text{Affected} - \text{Contralateral}$ )/ $\text{Contralateral} \times 100$ ; agreement was assessed by Bland-Altman differences ( $\Delta 3D\% - \Delta \text{circ}\%$ , percentage points), with correlation and linear regression as secondary analyses. A clinic-ready SOP was applied: upper limb seated with arm raised; lower limb standing with chest up and feet apart; 360° helical path with 10-15% overlap; real-time QC targeting <3% mesh defects; Revu scan 5-to-Blender post-processing. A QR-linked demo video and a rapid circumferential calculator accompanied the workflow.

**Results:**

$\Delta 3D\%$  showed strong correlation with circumferential measurements ( $r = 0.97$ ). Systematic bias was small and directionally consistent (mean bias =  $-4$  pp). Limits of agreement were acceptable (tighter for lower limbs), and most cases fell within predefined clinical margins (upper  $\pm 5$  pp; lower  $\pm 10$  pp). Regression yielded slopes near 1 and intercepts near 0, with smaller dispersion in lower-limb data.

**Conclusions:**

A clinic-ready posture-trajectory SOP enables feasible and reproducible portable 3D scanning for lymphedema assessment. Under this SOP, portable 3D demonstrates clinically meaningful agreement with the circumferential method for  $\Delta(\%)$ , while offering streamlined QC, operability, and adaptability for outpatient rehabilitation and follow-up.

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Abstract No.: 202

**Title :** The 20-Minute Check: Timing and Risk Factors of Intraoperative Arterial Thrombosis Following Microsurgical Arterial Anastomosis

**Introduction:**

Based on our institutional experience that arterial thrombosis tends to occur within 20 minutes after completion of an arterial anastomosis, we routinely perform patency assessments at 20 minutes post-anastomosis and before wound closure using distal palpation and the piqpicric test. This study aimed to clarify the timing of intraoperative arterial thrombosis, validate the rationale for the "20-minute check," and identify factors associated with intraoperative arterial thrombosis.

**Materials and Methods:**

We retrospectively reviewed 300 consecutive cases that underwent microsurgical arterial anastomosis between July 2022 and February 2025. Data on intraoperative arterial thrombosis, including its occurrence and timing, were collected along with patient demographics, preoperative laboratory findings, intraoperative parameters, and postoperative outcomes.

**Results:**

Intraoperative arterial thrombosis occurred in 30 cases (10%). Among these, 24 cases (80%) occurred within 20 minutes and 27 cases (90%) within 1 hour after anastomosis (range, 9-181 minutes). The "20-minute check" demonstrated a sensitivity of 80% and a specificity of 98%. Compared with the non-thrombosis group, patients with thrombosis were significantly older ( $p=0.005$ ) and significant differences in serum albumin ( $p=0.001$ ), C-reactive protein ( $p=0.032$ ), haemoglobin ( $p=0.010$ ), haematocrit ( $p=0.012$ ), and platelet count ( $p=0.047$ ). Arterial thrombosis occurred more frequently in hepatic artery reconstructions ( $p=0.014$ ). No significant differences were observed in hypertension, diabetes, smoking history, or preoperative chemotherapy/radiotherapy. Total flap loss occurred in 9 cases (3.0%), of which 8 were due to venous thrombosis and 1 to arterial thrombosis.

**Conclusions:**

The "20-minute check" is effective for the early detection of intraoperative arterial thrombosis. Several haematologic parameters were significantly associated with thrombosis, suggesting that in addition to surgical proficiency, postoperative risk stratification based on laboratory findings may help prevent thrombotic complications associated with microsurgical arterial anastomosis.

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Abstract No.: 232

**Title :** A new protocol for improving immediate monitoring of skin-island free flap with near-infrared spectroscopy and ultrasound

**Introduction:**

Postoperative monitoring is critical for detecting early complications and optimizing free flap salvage outcomes. We introduce a novel protocol for flap surveillance that integrates near-infrared spectroscopy (NIRS) with ultrasound assessment.

**Materials and Methods:**

Free flaps with skin paddle were included and classified into two cohorts according to the postoperative monitoring approach: those evaluated solely by ultrasound (control group) and those monitored using the new protocol (study group). Data regarding the number of surgical explorations, intraoperative findings, early flap failure, as well as sensitivity and specificity, were statistically analyzed and compared between groups.

**Results:**

221 free flaps in 209 patients were included the study. NIRS detected signs of vascular compromise in 21.8% of the cases. Among these, ultrasound confirmed complications approximately half, and surgical reintervention was indicated (10.9%), even in the absence of clinical changes in the skin paddle. All re-explored flaps were confirmed to have vascular compromise, while non-revised flaps showed no necrosis. Both flap salvage and overall survival rates were superior in the study group compared with control group (salvage rate: 72.7% vs. 25%; survival rate: 97% vs. 92.5%). The combined approach demonstrated 100% sensitivity and 100% specificity.

**Conclusions:**

This combined NIRS-ultrasound monitoring protocol represents a reliable, non-invasive method for early detection of free flap complications. It enhances salvage outcomes and reduces the need for dedicated staff to be continuously present for postoperative flap monitoring.

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Abstract No.: 239

**Title :** Associations Between Patient and Disease Factors and Intraoperative Findings in Lymphaticovenous Anastomosis Surgery: An International Multicenter Study

**Introduction:**

Lymphaticovenous anastomoses (LVA) are one of the main surgical treatments for lymphedema. Patient and disease factors that may influence intraoperative findings are not well studied. This study aims to identify potential predictive factors correlating with intraoperative outcomes and findings during LVA surgery.

**Materials and Methods:**

An international prospective, multicenter study recruited 183 patients undergoing 426 LVAs. Preoperative patient and disease characteristics were recorded. Surgeons documented intraoperative findings using a specifically developed semi-quantitative grading form, assessing lymphatic vessel function and fibrosis, venous backflow after anastomosis, lymphatic vessel location relative to preoperative indocyanine green lymphography (ICG-L) markings, and surgeon confidence in anastomosis patency. Associations between preoperative and intraoperative characteristics were analyzed.

**Results:**

Upper extremity lymphedema had markedly less lymphatic vessel fibrosis ( $p=0.002$ ) and more venous backflow ( $p=0.041$ ). Increased patient age correlated with more accurate ICG-L markings ( $p=0.048$ ) and greater surgeon confidence in the perioperative LVA patency ( $p=0.028$ ). Previous radical lymph node dissection negatively affected surgeon confidence in the LVA patency ( $p=0.042$ ). Lymphedema stage, etiology and duration, gender, and adjuvant therapy had no significant effect, however, Body Mass Index (BMI) > 30 might contribute to more venous backflow. Furthermore, increased patient age ( $p=0.026$ ) and lower extremity lymphedema ( $p=0.020$ ) were significantly associated with more preoperative erysipelas infections.

**Conclusions:**

Age and lymphedema location significantly influence preoperative infection risk, with location also affecting lymphatic vessel fibrosis and venous backflow. Due to more frequent infections and fibrosis in the lower extremity, precise mapping of functional lymphatics is warranted. Careful selection of recipient veins in the upper extremity due to more venous backflow and a BMI limit of 30 should be considered. Interestingly, intraoperative vessel and LVA quality were unaffected by lymphedema stage, etiology and duration. Consequently, patient selection should rely mainly on thorough preoperative lymphatic mapping, with the clinical significance of these findings remaining to be determined.

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Abstract No.: 268

**Title :** Immediate lymphatic reconstruction as a standard step in lower limb reconstruction

**Introduction:**

Reconstruction of lower limb defects aims to restore all affected anatomical structures, including skin, subcutaneous tissue, muscle, tendon, vessels, nerves, and bone. However, the lymphatic system, frequently compromised in oncologic or traumatic injuries, remains an often neglected element. Secondary lymphedema represents a major lifelong burden, and once established, its treatment remains challenging. The proven efficacy of prophylactic lymphaticovenous anastomosis (LVA) in preventing upper limb lymphedema after lymph node dissection supports the concept of proactive lymphatic reconstruction in other anatomical regions. This study supports the integration of lymphatic reconstruction as a fundamental element of lower-limb anatomical reconstruction in cases where there is a high risk of injury to the primary lymphatic pathways.

**Materials and Methods:**

Between August 2024 and October 2025, sixteen patients (mean age 59 years) underwent reconstruction of post-tumor resection defects of the anteromedial lower extremity or inguinal region, involving major lymphatic vessels previously identified by ICG lymphography. There were fourteen primary resections, one local recurrence, and one metastasis. Lymphatic restoration was achieved using the lymphatic transposition flap transfer (LIFT) technique, prophylactic LVA, or a combination of both. The LIFT flaps were performed using SCIP, ALT, and DIEP flaps, depending on the defect requirements.

**Results:**

Preliminary experience demonstrates the feasibility and safety of integrating lymphatic reconstruction into selected lower limb defects. Prophylactic lymphatic reconstruction achieved satisfactory outcomes, with preserved limb contour and absence of clinical postoperative lymphedema during early follow-up. A postoperative seroma occurred in one patient treated with a combined LIFT and LVA procedure following local infection after adjuvant radiotherapy, highlighting the influence of postoperative treatments on lymphatic function. No donor-site morbidity or additional complications were observed.

**Conclusions:**

Reconstructing "like with like" should include the lymphatic system, establishing a new standard in lower limb reconstructive surgery.

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Abstract No.: 308

**Title :** Put your Best Node Forward: LymphoDIEP Vs Gastroplipoic Vascularized Lymph Node Transfers for Breast Cancer Lymphedema

**Introduction:**

Lymphedema is among the most debilitating complications in breast cancer treatment and remains a significant therapeutic challenge. This study compared two vascularised lymph node transfer techniques: lymphoDIEP and gastroplipoic transfer (GEVLNT).

**Materials and Methods:**

A bicentric retrospective study was conducted on breast cancer-related lymphedema patients who underwent lymphoDIEP or GEVLNT (2018-2024). LymphoDIEP was used in case of amastia and involved inguinal lymph node transfer to the axilla on the thoracodorsal system, while GEVLNT was used in previously reconstructed breasts and involved omental lymph nodes to the arm/forearm. Data included demographics, surgical characteristics, lymphoscintigraphy, complications, limb circumference, non-surgical management, and LYMPH-Q.

**Results:**

A total of 37 patients (17 lymphoDIEP; 20 GEVLNT) were included with comparable age, comorbidities, smoking, and radiation, although lymphoDIEP patients had a higher BMI, and GEVLNT patients had worse baseline limb circumference. Operative time was longer for lymphoDIEP versus GEVLNT (423.6±57.0min vs 334.0±31.3min,  $p=0.0001$ ). Overall complications occurred in 23.5% of lymphoDIEPs (flap infection, necrosis, dehiscence) and 5% of GEVLNTs (scar contracture), no flap failure were present. Supplemental secondary liposuction was performed in 35% of patients. Preliminary postoperative data showed that both groups had improved lymphoscintigraphy Transport Index scores (-3.9;14.5 vs -6.0;6.1,  $p=0.679$ ) with reductions in lymphatic drainage sessions and compression garment use. GEVLNT demonstrated faster limb circumference reduction over time. At a significantly longer follow-up in lymphoDIEP (38.0;15.3 vs 27.0;7.0 months,  $p=0.035$ ), circumference reductions were greater at the proximal arm, with comparable outcomes to GEVLNT at the forearm and hand. Postoperative LYMPH-Q Symptoms, Appearance and Psychological scores were improved in lymphoDIEP.

**Conclusions:**

Both lymphoDIEP and GEVLNT techniques improved lymphedema outcomes. GEVLNT was associated with reduced operative time and faster circumference reduction. Although lymphoDIEP demonstrated greater improvements in some outcomes, longer follow-up and better baseline values may have contributed to these differences. Additional follow-up data will help better assess comparative long-term effectiveness.

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Abstract No.: 336

**Title :** Clinical experience with the use of the Serratus Anterior flap: versatility and reliability in the microsurgical reconstruction of complex limb defects

**Introduction:**

Intraoperative extremity wounds represent a challenging problem for orthoplastic surgeons, as they may result in devastating injuries involving critical structures. Reconstructive options for upper and lower limbs must provide adequate coverage for major anatomical structures, while maximizing function and providing acceptable body contour.

Many studies have shown that muscle flaps are ideal for extremity coverage, with Latissimus Dorsi and Rectus Abdominis commonly considered workhorse free flaps. However, their significant bulk has renewed interest in thinner muscle flaps, such as the Serratus Anterior. We present a case series of twelve patients who underwent reconstruction of upper and lower limb soft tissue defects using Serratus Anterior or muscle free flap. The objective of this abstract is to report our experience and evaluate our results, to demonstrate the versatility and reliability of this flap for extremity defect reconstruction.

**Materials and Methods:**

Twelve Serratus Anterior muscle flaps were used to reconstruct extremities defects between 2024 and 2025, three for the upper limbs and nine for the lower limbs. The age group was 25 to 44 years old, ten male and two female patients. Causes of injury included six patients with mechanical trauma, five crushing injuries secondary to a motor vehicle accident and one gunshot wound.

**Results:**

In our series, no flap complications were reported, such as infection, hematoma or total necrosis of the flaps. No donor site complications were found, including seroma, hematoma or winging of the scapula. Adequate coverage of soft tissue defects was achieved, and all patients were able to return to independent mobilization post-operatively. No further revision surgery was required.

**Conclusions:**

The present case series demonstrates that the Serratus Anterior muscle flap is reliable and highly versatile when used for reconstruction of complex extremity defects. The efficacy and minimal donor site morbidity makes this flap a reliable choice for reconstruction of soft tissue defects in the limbs.

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# SESSION 3

## HEAT & HEAL



#### Abstract No.: 24

### Title : High-Voltage Injuries and Train Surfing: A 30-Year Review of Epidemiology, Treatment, and Outcomes

#### Introduction:

High-voltage injuries associated with train surfing are a distinct subset of electrical injuries, yet detailed analyses remain limited. This study retrospectively reviewed train-surfing injuries admitted between 1994 and 2024, comparing their characteristics and outcomes to work-related high-voltage injuries.

#### Materials and Methods:

Medical records of 102 patients admitted for high-voltage injuries were analyzed, including 32 train-surfing and 70 work-related cases. Demographics, injury patterns, and clinical outcomes were assessed.

#### Results:

Train surfers were predominantly young males (median age 19 years), while work-related injuries involved slightly older males (median age 34 years). Train surfers sustained more severe burns (TBSA: 47.6% vs. 25.4%,  $p < 0.0001$ ) and higher ABSI scores (6.7 vs. 5.3,  $p < 0.01$ ). Vertical electrical flow was predominant in train surfing (65.6%), reflecting contact with overhead lines, while work-related injuries showed varied flow patterns, with diagonal flow being most frequent (58.6%). Train surfers had longer ICU stays (38.7 vs. 17.9 days,  $p = 0.001$ ) and underwent more surgeries per patient (5.3 vs. 2.8,  $p < 0.01$ ). Fasciotomy rates were significantly higher among train surfers (84.4% vs. 55.7%,  $p < 0.001$ ), as were amputations (53.1% vs. 25.7%,  $p < 0.0001$ ). Mortality rates were similar in both groups (25%).

#### Conclusions:

Train-surfing injuries are a distinct, highly severe subset of high-voltage trauma, characterized by larger burns, predominantly vertical current from overhead lines, and greater surgical complexity with higher fasciotomy and amputation rates. Although mortality is similar, the clinical burden is greater—longer ICU stays and more operations per patient. These findings call for targeted prevention focused on youth: public-health campaigns, rail-infrastructure measures (deterrent systems or physical barriers), and early education. Trauma centers should anticipate specific reconstructive and critical-care demands in this high-risk group and implement specialized multidisciplinary protocols.

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**Do you have any disclosures?** No

#### Abstract No.: 82

### Title : EDM (Excision, Dermis, Meek) – A surgical concept to efficiently treat large and deep burns

#### Introduction:

Severely burned patients face a trade-off between early excision to limit systemic complications and delayed grafting to ensure optimal graft-take. The EDM protocol—Immediate Excision, Dermal preservation/temporization, and Meek micrografting—was developed to bridge this gap while reducing surgical burden, streamlining care, and accelerating recovery. By preserving native dermis or applying artificial dermal matrices to temporize the wound bed, the approach aims to extend surgery-free intervals, allowing stabilization and rehabilitation while preparing an optimal surface for grafting and autologous cell expansion in extensive burns.

#### Materials and Methods:

This retrospective single-center cohort study compared patients with mean TBSA >40% treated using EDM ( $n = 20$ ) to matched controls treated before protocol inception (CTR,  $n = 20$ ). Primary outcomes included total number of surgeries, surgeries required to reach >90% re-epithelialization, time to full healing, surgery-free interval duration, and cumulative operating time. Secondary outcomes were ICU and hospital length of stay (LOS) and mechanical ventilation duration.

#### Results:

Groups were comparable in demographics (mean age 52.3 vs 56.3 years,  $p = 0.47$ ; mean TBSA 47.2% vs 50.2%,  $p = 0.58$ ). EDM significantly reduced total surgeries (5.3 vs 8.2,  $p = 0.0007$ ), surgeries to >90% healing (3.3 vs 6.5,  $p = 0.0001$ ), and total OR time (598 vs 1,064min,  $p = 0.0001$ ). Healing occurred faster (34.5 vs 52.4days,  $p = 0.003$ ) with longer surgery-free intervals (18.1 vs 12.7 days,  $p = 0.009$ ). EDM patients had shorter hospital stays (64.1 vs 89.4 days,  $p = 0.003$ ), fewer days (40.9 vs 69.5 days,  $p = 0.0009$ ), and ventilation times (446.6 vs 1,071 hours,  $p = 0.0002$ ).

#### Conclusions:

The protocol effectively integrates early excision and delayed grafting through dermal preservation or wound bed temporization with structured surgical pacing. It substantially reduces operative load, accelerates wound closure, and shortens intensive-care-dependency, demonstrating that systematic wound bed conditioning improves recovery and long-term outcomes in extensive burn injury.

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#### Abstract No.: 130

### Title : Risk Assessment for Early Complications in Nonbreast Tissue Expansion: 9-year Experience With 308 Tissue Expanders

#### Introduction:

Tissue expansion is a common and efficient reconstructive technique, yet associated with significant complications even for the most proficient reconstructive surgeons. Risk factors for complications have been described, but variability of the surgical technique and postoperative management of these patients as well as different definitions of the term "complications" make it difficult to interpret data impartially. This study evaluated the impact of demographic and operative parameters on early complications in tissue expander (TE) insertion surgery, using the Clavien-Dindo Classification (CDC) of Surgical Complications.

#### Materials and Methods:

A retrospective review of all nonbreast TE insertion procedures between 2009 and 2018 was conducted. Univariate and multivariate logistic regression analyses were performed to identify risk factors for complications.

#### Results:

In total, 308 TEs were inserted. Median age was 7 years (1–46 y). The most common indication was congenital melanocytic nevus (72.1%). The early complication rate was 28.6%, but only 1.3% required pharmacological treatment and 6.8% required surgical intervention. Multivariate analysis identified a history of autoimmune disease/malignancy, larger drainage size, and a less experienced surgical team as being associated with a higher risk of complications (CDC 1–3b). Procedures conducted in a previously expanded area were associated with a higher risk of complications requiring pharmacological/surgical intervention (CDC 2.3b). Aplasia cutis congenita was associated with a higher risk of complications requiring surgical intervention (CDC 3).

#### Conclusions:

We report several risk factors for complications following nonbreast tissue expansion, using a standardized classification of surgical complications. These may assist reconstructive surgeons in the management of this group of patients.

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#### Abstract No.: 196

### Title : Targeted Evacuation and Orthoplastic Integration Improve Upper Extremity Salvage in Combat Trauma: Experience from the Ukrainian War

#### Introduction:

War-related upper extremity injuries frequently combine massive soft-tissue loss, skeletal destruction, and contamination. Early in the conflict, fragmented evacuation and delayed reconstructive access resulted in high infection rates and limited salvage potential. To address these systemic challenges, an integrated model linking targeted evacuation with orthoplastic management was introduced.

#### Materials and Methods:

Patients with complex upper-limb trauma were managed through a coordinated pathway emphasising early radical debridement, direct transfer to reconstructive-capable centres, and combined orthopaedic-plastic surgical planning according to BOOST and "Fix and Flap" principles. Outcomes were compared with those treated under conventional multi-stage evacuation.

#### Results:

Implementation of this model markedly reduced evacuation delays, enabled earlier wound stabilisation and soft-tissue coverage, and decreased the rate of infection-related complications. Timely reconstruction within the first postoperative week allowed consistent limb preservation, even in severely contaminated injuries. The integrated process demonstrated that multidisciplinary planning and correct patient routing are critical determinants of outcome.

#### Conclusions:

The combination of targeted evacuation and orthoplastic collaboration transforms limb reconstruction from a reactive sequence of procedures into a structured, preventive system. This approach shows that infection control and limb salvage in wartime settings depend less on antibiotics or resources than on the organisation and timing of care.

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#### Abstract No.: 212

### Title : Burns Injuries During a Large-Scale Conflict: Epidemiology, Severity, and Outcomes from a National Trauma Registry

#### Introduction:

High-intensity conflicts precipitate spikes in burn burden that challenge evacuation, triage, and definitive burn care. In particular, blast-related thermal exposure and confined environments heighten the risk of facial burns and inhalation injury, escalating needs for rapid airway control and critical care. We analyzed injury patterns, treatment, and outcomes during the Israel's 2023–2025 war period to guide surge planning and clinical practice.

#### Materials and Methods:

Retrospective registry study of conflict-related casualties from October 27, 2023 to January 19, 2025. We included patients with burns, with or without other trauma, and abstracted demographics, mechanism of injury, anatomic distribution, transport mode, early interventions, TBSA, ICU admission, time from event to hospital, and time from event to the OR, disposition, and length of stay. Descriptive analyses were conducted for the overall cohort and for the subset who were hospitalized.

#### Results:

Among 4,972 casualties, 479 sustained burn injuries (median age 22; 99.6% male). The predominant mechanism was explosions (85%). Common regions were the face (45%), upper extremities (38%), lower extremities (19%), neck (11%), and head (8.6%). In the subset of burn patients who were hospitalized ( $n=235$ ), median event-to-hospital interval was 66 minutes (IQR 55–93). Documented inhalation injury was present in 19%. Upon ED arrival, 37% proceeded directly to the OR, and 50% of all casualties were ultimately admitted to the ICU. Early prehospital and ED resuscitation included whole blood in 17% and freeze-dried plasma in 8.8%. Median hospital length of stay was 10 days (IQR 3–20). Among those hospitalized, 49% were discharged to rehabilitation.

#### Conclusions:

In this context, burns were overwhelmingly explosion-related and frequently involved the face and upper extremities, with one in two hospitalized patients requiring ICU care. Rapid evacuation (median ~1 hour) coincided with sizable early use of blood products, yet the inhalation injury burden underscores the need for early airway assessment and standardized ventilatory pathways.

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#### Abstract No.: 316

### Title : The impact of histologic margin status on outcomes in cutaneous head and neck melanoma: A retrospective cohort of 772 patients

#### Introduction:

Evidence supporting wide local excision (WLE) for melanoma remains limited, particularly in the head and neck region where anatomy and the need for tissue preservation influence outcomes. Current guidelines still recommend 1–2 cm margins, which pose cosmetic and functional challenges in this region and complicate reconstructive planning. Emerging data suggest WLE may be safely omitted for thin melanomas under carefully selected conditions, though consensus and long-term survival data remain limited. Against MelMarT-III (NCT 03860883), WoW (NCT 06363591) and NORMA (COMO: NL-009370), we aimed to determine whether final histologic WLE margin impacts locoregional control and melanoma-specific survival (MSS) in cutaneous head and neck melanoma.

#### Materials and Methods:

Patients with invasive melanoma of the head and neck diagnosed between 2000–2018 were identified from a prospectively maintained database of a tertiary institution. Associations between WLE margin and survival outcomes were analyzed using Kaplan-Meier estimates and Cox proportional hazards regression.

#### Results:

In this context, burns were overwhelmingly explosion-related and frequently involved the face and upper extremities, with one in two hospitalized patients requiring ICU care. Rapid evacuation (median ~1 hour) coincided with sizable early use of blood products, yet the inhalation injury burden underscores the need for early airway assessment and standardized ventilatory pathways.

#### Conclusions:

In this retrospective cohort, histologic margin status was not associated with local recurrence or MSS in cutaneous head and neck melanoma, regardless of Breslow thickness. Though likely underpowered, these results contribute to the accumulating evidence on histologic margin in melanoma. We anticipate that forthcoming prospective data from the MelMarT-III, NORMA and WoW trials will provide further clarity on this important issue. These data warrant consideration in guideline discussions.

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#### Abstract No.: 338

### Title : Utilization of Perifascial Loose Areolar Tissue Grafting as an Autologous Dermal Substitute in Extremity Burns

#### Introduction:

Perifascial areolar tissue (PAT) is an areolar layer over the muscle fascia. PAT has been shown to be resistant to ischemia and prone to survival even in ischemic conditions. PAT grafts provide a vascular tissue layer on necrotic bone and tendons where skin grafting is not possible. The effect of PAT grafting on burn reconstruction has not yet been reported. Thus, in this study, we aimed to present our experience and discuss the role of PAT grafting in extremity burn reconstruction.

#### Materials and Methods:

Between January 2019 and December 2022, 19 PAT grafting procedures were performed in 11 patients. All patients had second- or third-degree burns in the upper and lower extremities, with exposed bone or tendon. PAT grafts were harvested from the abdominal region and were used for the upper extremity in 7 patients and the lower extremity in 4 patients. Immediate skin grafting was performed during the same session.

#### Results:

he patients' mean age was 50.7 years; defect size, 3.3 × 3 cm<sup>2</sup>; and follow-up time, 11.8 months. The survival rates of the PAT and skin grafts were 93.8% and 68.6%, respectively. Partial skin graft losses were encountered in 4 patients, and total skin graft loss was seen in 1 patient.

#### Conclusions:

PAT grafting is an alternative method to the use of dermal substitutes and flap surgery in small-to-medium-sized defects with exposed bone and tendon in burn patients.

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#### Abstract No.: 355

### Title : A Spark of Life Through the Flames: Frontline Surgical Management and Outcomes in a Mass Casualty Burn Incident

#### Introduction:

In March 2025, a major fire at a nightclub started a burn mass casualty incident, affecting more than 250 people, leading to a substantial surge pressure on the local health system. This study presents the acute surgical response and early outcomes.

#### Materials and Methods:

All patients were triaged using the ATLS-based burn protocols. The patients' age ranged 15–50 years, 24% average, affecting 114 male and 45 female patients. Immediate priorities included airway control when inhalation injury was suspected followed by oxygen therapy, early fiberoptic assessment and intubation when indicated. Resuscitation was performed according to the Parkland formula, utilizing analgesia, gastroprotective therapy, and antiepileptic prophylaxis. Local burn care mode included sterile wound preparation, TBSA assessment, edema control, early escharotomy, surgical and enzymatic debridement followed by psychological support.

#### Results:

The total number of hospitalized patients reached 193 of whom 126 sustained burn injuries, 85 had inhalation injury, 40 patients required intubation. Burns most frequently involved functionally and airway-critical regions of the head/face 96, neck 30, and upper extremities 78 patients, predominantly in a multiregional combination. Teno (14) and lower extremity (13) burns were less common. Inhalation injury was significantly correlated with early intubation and ICU admission. A higher TBSA% positively correlated with ICU transferece. The number of patients transferred abroad within the first 48 hours was 115 using the EU Civil Protection Mechanism. Despite the extreme surge the mortality was low (2.07%). At 7 months, all patients are recovering from home and undergoing physical therapy, scar treatment and psychological therapy. More than 80 patients will need additional surgical treatment.

#### Conclusions:

In MCI surgical leadership and protocol execution can contribute to low mortality rate. A multidisciplinary approach is of great significance and leads to more effective results proactively addressing burn treatment and airway control, preventing known complications. International collaboration and support are highly advised and praised for better outcome.

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#### Abstract No.: 387

### Title : Outcomes of Preoperative Botulinum Toxin Administration in Abdominal Wall Reconstruction - A Propensity Matched Analysis

#### Introduction:

Achieving tension-free repair in large complex abdominal wall defects remains challenging. Prior studies demonstrated preoperative Botulinum Toxin (BTX) administration to the lateral abdominal wall musculature significantly increased fascial closure rates during abdominal wall reconstruction (AWR). This study aimed to compare the outcomes of patients undergoing complex AWR with and without preoperative BTX.

#### Materials and Methods:

A retrospective study of patients undergoing AWR with and without preoperative BTX between July 2016 and December 2023 was completed. Patients with multiple, bridging, and underlay meshes were excluded. Propensity score matching (PSM) was performed based on age, BMI, prior hernia repair, and mesh plane. Intraoperative factors and postoperative outcomes were compared.

#### Results:

A total of 898 patients underwent AWR (BTX+ 69, BTX- 829). Sixty-six pairs of patients were analyzed. Average age (BTX+ 62.1, BTX- 63.2 years;  $p = 0.609$ ) and BMI (31.9, 31.8 kg/m<sup>2</sup>;  $p = 0.905$ ) were comparable. Pairs were matched perfectly on prior hernia repair, onlay and underlay mesh placement. Sex, smoking status, diabetes, and ventral hernia working group were comparable ( $p=0.161$ , 0.189, 1.000, 0.910, respectively). Bilateral external oblique release was more common in the BTX+ group (63.6%, 25.8%;  $p = 0.00003$ ). Biosynthetic mesh use was similar (93.9%, 90.9%;  $p=0.742$ ). Median follow-up duration was equivalent (582, 475 days;  $p=0.843$ ). Operative time (222, 264.7 mins;  $p=0.071$ ) was higher in the BTX+ group. Length of stay (P, 1, 7.9 days;  $p=0.876$ ) and incidence of surgical site infection (7.6%, 12.1%;  $p=0.559$ ), seroma (9.1%, 7.6%;  $p=1.000$ ), hematoma (6.1%, 7.6 %;  $p=0.744$ ), and delayed wound healing (28.8%, 19.7%;  $p=0.310$ ) were comparable. Hernia recurrence was higher in the BTX+ group (22.7%, 12.1%;  $p=0.057$ ). On time to event analysis, there was no significant difference in hernia recurrence-free survival between the two groups ( $p=0.81$ ).

#### Conclusions:

Preoperative BTX use was associated with similar preoperative outcomes and recurrence-free survival compared to matched controls, indicating no clear benefit in complex AWR.

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# SESSION 4

## THE HEAD & NECK JOURNEY

Abstract No.: 77

**Title :** In two stage facial reanimation does an increase gap between stages affect teh surgical result?

**Introduction:** Unilateral, complete, longstanding facial paralysis is commonly treated with a two stage approach. An initial cross facial nerve graft (CFNG) to import a nerve supply to the weak side is followed by a second stage nerve graft to the nerve graft to recreate a smile. The ideal gap between stages is generally considered 6-9 months, but many patients experience significant delays between procedures, and it is not known how this affects results.

**Materials and Methods:** A retrospective review of all cases of unilateral facial paralysis treated with CFNG then free muscle transfer were reviewed. Cases were split into two groups - group 1 where the delay between stages was < 1 year and group 2 where the gap was > 1 year. Assessments of the surgical results of the smile reanimation were made using photography, video; increase of movement at the mouth and the Sunnybrook scoring system pre and post operatively.

**Results:** A total of 59 patients were identified with a complete data set including before and after photography. There were 31 in group one and 28 in group two. Group one gave an average increase in Sunnybrook score of 49 and group 2 gave 40. Average increase in movement at the mouth was 7.3 mm in group 1 and 5.7 mm in group 2.

**Conclusions:** This study showed an increase in surgical improvement in patients undergoing a second stage facial reanimation within a year of the original CFNG. The study was retrospective and many candidates were excluded due to incomplete data. The results suggest that the second stage should be undertaken within a year ideally although the results for delayed surgery are still worthwhile. Causes of delay included Covid restrictions; service limitations and patient factors. Further prospective studies are required to consolidate this study.

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Abstract No.: 79

**Title :** Pediatric Head and Neck free flap reconstruction for Noma Sequelae: A single-center experience.

**Introduction:** Noma is a devastating orofacial gangrene affecting malnourished children in low-resource settings, leaving severe facial deformities and functional impairment. Microsurgical free flap reconstruction offers a means to restore form, and function yet remains technically challenging in the pediatric population. This study presents a 30-year single-center experience analyzing flap survival, complications, and functional outcomes.

**Materials and Methods:** All pediatric patients (<18 years) who underwent free flap reconstruction for noma sequelae between 1995 and 2023 were retrospectively reviewed. Data collected included demographics, anatomical site, flap type, operative details, peri-operative complications, re-exploration rate, donor-site morbidity, and re-exploration rate, and long-term functional outcomes. Primary endpoint was total flap survival; secondary endpoints included early complications, donor-site morbidity, and re-exploration rate.

**Results:** A total of 100 patients (mean age 10.35 years, range 4-17) underwent 105 free flap reconstructions. Anatomical regions reconstructed included the cheek, oral and nasal lining, chin, and midface. The most frequently used flaps were the serratus anterior, latissimus dorsi, radial forearm, fibula and anterolateral thigh. Total flap survival was 98%, with two total and three partial flap losses. Early complications occurred in 52 cases, with a 13% re-exploration rate for vascular compromise. Donor-site morbidity was minimal. At long-term follow-up, most patients achieved stable skin and tissue coverage, restored oral competence, and satisfactory aesthetic and functional results.

**Conclusions:** Free flap reconstruction for noma sequelae in children is safe, reliable, and achieves durable reconstructive success. Microsurgical reconstruction provides an effective, long-term solution for complex non-rotated facial defects, enabling functional restoration, aesthetic improvement, and social reintegration. These results demonstrate that if such extensive noma defects can be successfully reconstructed with free flaps, this approach should be considered for any pediatric patient requiring major head and neck reconstruction.

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Abstract No.: 87

**Title :** To give up or persist? Impact of multiple and sequential free flap reconstructions on head and neck cancer patients survival: A retrospective analysis of 1369 consecutive cases

**Introduction:** In head and neck oncology, radical resection is often limited by reconstructive feasibility, especially in previously treated patients and patients presenting with a vessel-depleted neck. While multiple sequential free flap reconstructions are technically feasible, their impact on survival has not been thoroughly investigated.

**Materials and Methods:** This retrospective case-control study analyzed head and neck cancer patients who underwent free flap reconstruction between 2016 and 2023 at our institution. Patients were stratified into a significance group (1-3 free flaps) and a control group (1-2 flaps). Clinical characteristics and complications, and survival outcomes were compared. Multivariable logistic and Cox regression analyses were performed to identify predictors of complications and survival.

**Results:** A total of 120 patients were included (63 in the study group, 57 in the control group). Despite the greater reconstructive complexity in the study group, complications and takeback rates did not differ significantly. Overall survival at 10 years was significantly higher in the study group (88.0% compared to the control group 66.3%, p = 0.01). Multivariable Cox regression confirmed a significant survival benefit for patients undergoing 3 free flaps (HR 0.2, 95% CI 0.08-0.54, p = 0.005). Repeated flaps were not associated with higher complication rates, and third-or-beyond flaps showed a trend toward fewer late complications.

**Conclusions:** Sequential free flap reconstruction is safe and may confer a survival advantage in patients with recurrent head and neck cancer. These findings support a proactive surgical approach and reinforce the reconstructive surgeon's pivotal role in enabling curative treatment across multiple disease recurrences.

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Abstract No.: 95

**Title :** Head and Neck Reconstruction with the Superficial Circumflex Iliac Artery Perforator (SCIP) Free Flap: the new Gold Standard?

**Introduction:** Head and neck tissue defects after ablative surgery often require complex and composite reconstructions. The superficial circumflex iliac artery perforator (SCIP) flap is an extremely versatile perforator-based flap with minimal donor site morbidity, which may represent the optimal procedure in this setting. Over the last five years we collected a large base of experience, including both simple and chimeric SCIP-based reconstructions, making this flap our first choice for head and neck reconstructions.

**Materials and Methods:** 76 patients undergoing ablative head and neck surgery for oncologic pathologies were treated by means of a SCIP flap reconstruction. Patients' mean age was 66 years old (range 37-89). 53 were males and 23 females. 61 flaps were simple and 15 were chimeric reconstructions pattern. Intraoperative ICG perfusion imaging was performed in all cases.

**Results:** All the patients were successfully treated with no flap losses were encountered. 12 patients encountered post-operative complications: in 4 cases revision surgery was required for venous congestion while the remaining cases were managed conservatively (4 wound dehiscence, 3 infection). No patients showed donor site complications. The mean follow-up period was 12 months (range 3-24).

**Conclusions:** Our case series demonstrate the reliability and versatility of the SCIP flap for different kinds of head and neck reconstructions. The chimeric options combined with bone, double skin paddle and muscle offer a broad variety of functional reconstructive solutions for complex head and neck surgeries. Intraoperative ICG perfusion examination provides a valuable tool to assess and ascertain proper vascularization and post-anastomosis vessel patency in complex microvascular flap-based reconstructions.

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Abstract No.: 113

**Title :** Free tissue transfer in pediatric patients: 30-year experience from a tertiary care cancer center

**Introduction:** Free flaps in pediatric patients are challenging because of small vessel size, vasospasm, limited donor sites, and potentially undiagnosed hypercoagulable disorders. Few large studies have reported outcomes. We present our experience with free tissue transfer in pediatric patients at a large cancer center.

**Materials and Methods:** This retrospective case series included patients <18 years who underwent free tissue transfer over a 30-year period (1994-2023). Data were collected on demographics, oncologic management, surgical details, and outcomes.

**Results:** Free flap reconstruction was performed in 111 patients with a median age of 11 years. The most common diagnoses were Ewing's sarcoma and rhabdomyosarcoma in the head and neck, osteosarcoma and angiosarcoma in the upper extremity, osteosarcoma in the lower extremity, and Ewing's sarcoma in the pelvis. The sites of reconstruction were the head and neck (n = 43), upper extremity (n = 41), lower extremity (n = 49), and trunk (n = 5). The fibula was the only flap used for bony reconstruction in this study. Soft tissue reconstruction was most commonly performed with the rectus abdominis, anterolateral thigh, and latissimus dorsi flaps. The overall flap success rate was 97% (head and neck, 100%; upper extremity, 93%; lower extremity, 96%; trunk, 100%), with no significant difference between sites. Receptive complications occurred in 33% of patients and were significantly more common in the lower extremities (54%). Complications were significantly higher in patients who received radiation (neoadjuvant or adjuvant) or chemotherapy (combined neoadjuvant and adjuvant therapy).

**Conclusions:** Free tissue transfer in pediatric patients has high success rates. Radiation and chemotherapy are risk factors for increased complications.

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Abstract No.: 121

**Title :** IS GENERAL ANESTHESIA ALWAYS MANDATORY? INTRODUCING THE "AIM" APPROACH TO MICROSURGICAL HEAD AND NECK RECONSTRUCTION WITH THE PATIENT AWAKE

**Introduction:** General anesthesia (GA) is the traditional standard for head and neck free flap reconstruction but may pose significant risks in elderly or medically fragile patients. This study aims to compare peri-operative complications and post-operative results from patients undergoing head and neck free flap reconstruction with the current standard of care (GA) with those performed with the Awake Integrated Microsurgical Approach (AIM), performed under loco-regional anesthesia and sedation.

**Materials and Methods:** A retrospective cohort study was conducted including 40 patients undergoing microvascular head and neck reconstruction after oncological resection (20-GA; 20-AIM). Due to the need of standard intubation or tracheostomy, intraoral reconstructions were excluded. Demographics, comorbidities, operative parameters, and postoperative outcomes were recorded. Complications were graded using the modified Clavien-Dindo classification.

**Results:** Scalp and Squamous Cell Carcinoma were the most frequent location and histotype. Combined soft tissue and bone defects were more frequent in GA (60% vs. 37%) but this difference was not statistically relevant. LD and ALT/FL represented 85% of the flaps employed. Peripheral and neck anesthetic blocks were combined to sedation in 90% and 40% of the AIM group. AIM patients were significantly older (80.9 vs 71.6 years; p<0.004) and had higher comorbidity burden (Charlton Comorbidity Index 1.4 vs 0.5; p = 0.004). Despite higher medical and anesthesiologist risk, all AIM procedures were completed without conversion to GA. Operative time was shorter under AIM (352.6 vs 494.3 min; p = 0.001), while ischemia time, transfusion rate, and flap outcomes were comparable. No AIM patient required ICU admission (p= 0.047). Rates of major surgical complications (Clavien-Dindo ≥ III) and total or partial flap loss were similar.

**Conclusions:** The AIM approach allowed safe, effective, and resource-sparing microvascular reconstruction in frail patients unfit for GA, reducing anesthetic exposure, operative time, and ICU utilization. These findings support the idea of expanding awake microsurgery to selected low-risk patients within ERAS protocols.

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Abstract No.: 126

**Title :** The levator aponeurosis-Miller's muscle complex adaptation technique as a common approach to the correction of congenital and acquired non-syndromic blepharoptosis.

**Introduction:** Blepharoptosis is defined as the abnormal descent of one or both upper eyelids and represents the most common eyelid disorder leading patients to seek ophthalmologic consultation. In addition to functional impairment, ptosis has significant aesthetic and psychosocial impacts, affecting patients' quality of life. Drawing on 25 years of clinical experience, we report technique and results of our common surgical approach to perform an advancement of the complex up to a check ligament suspension in cases with minimal levator function.

**Materials and Methods:** A retrospective, longitudinal, single-center study was conducted using the evolution of the levator aponeurosis-Miller's muscle complex advancement technique for ptosis correction from 2000 to 2025. All surgeries were performed by the same surgeon. Eighty patients (90 eyelids) were included: 10 with congenital and 70 with acquired ptosis. Patients were divided into two cohorts (pre- and post-2020) based on a paradigm shift from standardized preoperative and intraoperative measurements to a tailored surgical approach, guided by the anatomical and functional characteristics of each patient's levator aponeurosis-Miller's muscle complex. Exclusion criteria included myasthenic, syndromic and revision cases. All patients had ≥12 months of follow-up. Complication rates were compared using Fisher's exact test (p<0.05).

**Results:** Correction was effective in 95.6% of cases, with one recurrence (1.1%). Complications all occurred in the pre-2020 cohort, including two cases of postoperative entropion and one conjunctival prolapse. One case of keratoconjunctivitis was observed. No postoperative complications were reported after 2020. The difference was statistically significant (p<0.034). No cases of contralateral ptosis, significant scarring, lagophthalmos, visual impairment, or epiphora were observed.

**Conclusions:** Based on our data, the evolution with refinements in the levator aponeurosis-Miller's muscle complex adaptation technique represents a surgical approach that can be reliable and effectively used in acquired and congenital blepharoptosis from normal to minimal levator function.

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Abstract No.: 145

**Title :** Integration of Artificial Intelligence (AI) Based Facial Analysis with Clef-Q Scores in Patients Undergoing Clef Lip-Palate Rhinoplasty

**Introduction:** Clef lip-palate (CLP) rhinoplasty aims to restore nasal symmetry, facial harmony, and airway function. Traditionally, surgical success has been assessed through subjective scales based on surgeon observation and patient perception. With advances in AI, facial features such as symmetry, proportion, and aesthetic appeal can now be quantified objectively. This study aimed to integrate AI-based aesthetic parameters-Symmetry Ratio (SR), Beauty Score, and Combined Esthetic Effect (CEE)-with Clef-Q subscales (Appearance, Facial Function, and Quality of Life) to provide a multidimensional evaluation of surgical outcomes.

**Materials and Methods:** This retrospective pre- and post-operative facial photographs were analyzed using the AI platform with 12 anatomical landmarks. AI-derived parameters included SR (right-left alignment), Beauty Score (0-100 scale), and CEE. AI-estimated age was also recorded. Clef-Q questionnaires assessed appearance, function, and quality-of-life domains. Statistical analyses included descriptive tests, Pearson correlation, t-tests, and ANOVA.

**Results:** Thirty-two patients (14 females, 18 males; mean preoperative age 21.4 ± 6.0 years) were analyzed. Mean total Clef-Q score was 301.9 ± 69.7. AI-predicted ages were on average 8.6 years older than actual (p = 0.001). Preoperative age correlated positively with facial function scores (r = 0.51, p = 0.0026), but not with appearance or total scores. Beauty and CEE values showed no significant correlation with Clef-Q outcomes (p = 0.05). Females had slightly higher Beauty and CEE scores, while clef type showed no significant differences.

**Conclusions:** AI-based aesthetic metrics and subjective quality-of-life scales reflect distinct yet complementary dimensions of postoperative outcome. Integrating AI facial analysis with Clef-Q enables a more comprehensive and objective evaluation of both aesthetic and functional results in CLP rhinoplasty.

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Abstract No.: 188

**Title :** Facial Reanimation... Reimagined? Analysis of 100 free gracilis muscle flaps using numerIFACE suite, a novel tool for facial analysis

**Introduction:** Precise assessment of facial analysis outcomes remains challenging due to the subjective nature of clinical measurements. Current facial movement evaluation methods are examiner-dependent and lack reproducibility. To this end, we developed an automated tool, numerIFACE suite, to quantify facial movement from images and videos, eliminating the need for manual landmark placement.

**Materials and Methods:** Preoperative and postoperative images of 100 patients who underwent free muscle flap facial reanimation were analyzed using numerIFACE. Static-Commissure-Displacement (SCD) was calculated as the change in commissure position between pre and postoperative images at repose. Commissure-Excursion (CE) measured follow-on the commissure's displacement from ego's to smile.

Static-Upper-Lip-Displacement (SULD) was calculated as the vertical displacement of the lips to the baseline midpoint from preoperative to postoperative repose positions. Commissure-Excursion (CE) and Upper-Lip-Dental-Show (ULD) measured how far the commissure and upper lip, respectively, moved from repose to smile. Values were reported as mean (min,max) and negative SCD/CE and SULD/ULD values corresponded to the medial and caudal directions, respectively. Mirror-symmetry ratio (SR) was calculated as the ratio of the smaller CE to the larger CE.

**Results:** Across 100 facial reanimation patients, the affected side SCD increased on average by 6.1 mm (min: 0.7 mm, max: 18.4 mm) laterally, accompanied by gains in CE at 4.6 mm (0.1,13.8), SULD at 4.8 mm (-1.9,17.8), and ULD at 2.3 mm (0.0,7.8). Corresponding contralateral values were -3.9 mm (-9.9,0.7), -3.8 mm (0.0,4.2), -3.5 mm (-10.0, 9.6), and 2.2 mm (0.0,8.8), respectively. Symmetry ratio improved from 0.62 to 0.79 on average postoperatively.

**Conclusions:** numerIFACE is a novel, reliable, standardized, and patient-specific clinical tool that can quantify, monitor and assess facial function and recovery in facial paralysis patients.

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Abstract No.: 294

**Title :** CT-based prediction of post-traumatic enophthalmos: the independent role of herniated tissue volume beyond orbital volume difference

**Introduction:** Post-traumatic enophthalmos has traditionally been attributed to orbital volume expansion. However, the respective influence of herniated soft tissue, volume expansion and defect dimensions remains insufficiently defined in clinical studies.

**Materials and Methods:** Patients with orbital floor fractures who underwent CT imaging were retrospectively analyzed. Orbital volume was calculated using 3D Slicer segmentation. Herniated tissue volume (fat and/or muscle displaced into paranasal sinuses) was measured separately. Defect dimensions in the sagittal and coronal planes were multistep to obtain an estimate of the mostly non-circular defect area. Enophthalmos (Δd, mm) was referenced on axial CT as the perpendicular distance from the corneal apex to an interzygomatic reference line, comparing injured and contralateral orbits. Radiologic enophthalmos was defined as an interocular discrepancy greater than 0.7 mm, based on previously reported data. Correlation analyses were performed between Δd and (i) orbital volume difference (ΔV), (ii) herniated tissue volume, and (iii) defect area.

**Results:** Forty-four patients were included. The mean enophthalmos (Δd) was 0.66 ± 1.26 mm. Orbital volume difference showed no significant correlation with enophthalmos (r = 0.065, p = 0.677), and defect area demonstrated no meaningful association (p = 0.302). In contrast, herniated tissue volume showed a statistically significant positive correlation with enophthalmos (r = 0.247, p = 0.020). The median herniation volume was 1.23 cm<sup>3</sup> (range 0.97-1.97 cm<sup>3</sup>), indicating that larger herniation volumes were consistently associated with greater posterior displacement of the globe.

**Conclusions:** Enophthalmos correlates more strongly with herniated tissue volume than with orbital volume difference or defect dimensions. Classical assumptions based solely on ΔV may underestimate radiologic enophthalmos. Quantifying herniation provides a more reliable predictor of globe recession and may better guide surgical decision-making than volume-based criteria alone.

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Abstract No.: 368

**Title :** Investigating the Role of the Trigeminal Nerve in Proprioception of the Human Facial Muscles

**Introduction:** To facilitate proprioception, skeletal muscles contain muscle spindles and Golgi tendon organs. The facial muscles, however, are unique as they do not contain these classical proprioceptors. Hence, facial proprioception remains elusive. We hypothesize that cutaneous mechanoreceptors innervated by the trigeminal nerve play an essential role in facial proprioception. The aim of this study was to investigate the effect of trigeminal nerve blocks on facial proprioception.

**Materials and Methods:** In this investigational pilot study, we compared muscle recruitment before and after trigeminal nerve blocks by using high-density surface electromyography (HD-EMG). We first applied bilateral HD-EMG grids to the forehead and cheeks and bilateral bipolar EMG sensors caudal to the mouth corners of 10 healthy participants. Participants were asked to raise their eyebrows, smile with their mouth closed, and lower the corners of their mouth consecutively at 25%, 50%, and 100% of maximum effort. Then, bilateral ultrasound-guided nerve blocks of all main peripheral trigeminal nerve branches (supratrochlear, supraorbital, infraorbital, mental) were performed, and measurements were repeated.

**Results:** Significant differences (p<0.001) before and after the blocks were found for the mean sEMG envelope activity of the eyebrow during the 25% (31.1% ±8.3% vs. 38.2 ±5.9% activity of maximum effort) and 50% (19.8% ±1.6% vs. 49.8% ±11.2%) effort trials. Differences with comparable significance (p<0.001) were found for the cheek during the 25% (8.5% ±4.3% vs. ±5.3%) and 50% (41.4% ±8.7% vs. 48.0% ±10.2%) effort trials. The within-trial variation in muscle activity was significantly lower before than after the blocks for the cheek at 25% (p<0.01) and 50% (p<0.001), but significantly higher for the eyebrow at 50% (p<0.001).

**Conclusions:** These are the preliminary results of our pilot study. These results indicate that while feedforward afferents is a key contributor in determining facial expressions, feedback control through skin afferents is a key important role in inhibiting muscle activation.

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# SESSION 5

## THE ENHANCED BREAST

**Abstract No.: 147****Title :** Multi-Scenario Application of Portable 3D Scanning in Volume Estimation and Symmetry Guidance during Breast Reconstruction Surgery**Introduction:**

Accurate and reproducible volume assessment is crucial for achieving symmetry in breast reconstruction. Conventional intraoperative manual estimation, water displacement, or subjective or impractical. We established and validated a multi-scenario workflow for portable structured light 3D scanning to support volume estimation and symmetry guidance.

**Materials and Methods:**

The study was conducted in sequential phases: Phase I (phantom accuracy) validated trueness using calibrated water balloons (200-500 mL); Phase II (posture and modeling) compared supine versus forward-leaning postures and introduced the Subtractive Modeling Method (SMM) to reduce inferior occlusion; Phase III (biologic simulation) scanned pork skin, beef, and pork muscle (postoperative) and porcine breast (preoperative) to evaluate water displacement. Phase IV (BREAST-Q) questionnaires were collected preoperatively and at defined postoperative windows. Outcomes included accuracy (bias, RMSE, MAPE), repeatability (ICC), feasibility (scanning time, model completeness), and patient-reported outcomes.

**Results:**

Final sample included 298 patients with an average age of 46.2 ± 10.2 years and BMI of 25.5 ± 5.0 kg/m<sup>2</sup>. The mean interval between PMRT completion and implant exchange was 8.2 ± 5.4 months. Within 90 days post-exchange, complications were observed in 32 (10.7%) patients: 14 (43%) delayed wound healing, 13 (44%) major infections, 9 (30%) minor infections, 3 (1%) seroma, 3 (1%) flap necrosis, and 1 (0.3%) hematoma. ROC analysis identified <math>6.87</math> months as the optimal threshold for exchange after PMRT (AUC: 0.558). On univariate analysis, factors significantly associated with 90-day complications included prepectoral placement (p<math>0.031</math>), biologic mesh (p<math>0.040</math>), and exchange within 6.87 months (p<math>0.028</math>). Of these, delaying exchange beyond 6.87 months was associated with a reduced risk of 90-day complication (OR 0.813, p<math>0.046</math>) on multivariable analysis.

**Conclusions:**

This study found that waiting at least 6.87 months after PMRT for expander-to-implant exchange was associated with the lowest risk of 90-day complication. Given the known adverse impact of radiation on soft tissue, this delay may reduce susceptibility to delayed wound healing and late-onset infections. Intraoperative 3D scanning, standardized modeling, completeness, and short intraoperative scanning time (<math>3</math> mins per case), BREAST-Q analysis linked symmetry indices with patient satisfaction outcomes.

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# SESSION 6

## THE SENSATIONAL BREAST

Abstract No.: 32

**Title :** The Debate Ends: Immediate and Delayed Free Flap Breast Reconstruction Have Comparable Long-Term Outcomes in Immediate Cases: A National 10-Year Cohort Study of Over 20,000 Autologous Breast Reconstruction Procedures

**Introduction:** The risk of autologous breast reconstruction using free flaps (immediate or delayed) may impact the risk of postoperative complications. However, differences in patient characteristics between these groups often make direct comparisons challenging. We analyzed national surgical outcomes using a large multi-center cohort and applied advanced statistical matching ensuring fair comparison between immediate and delayed reconstructions. Our goal was to determine whether timing of reconstruction independently influences complications.

**Materials and Methods:** We performed a retrospective review of 20,415 patients from the ACS-NSQIP database (2012-2022) who underwent free flap breast reconstruction. Patients were categorized based on the timing of reconstruction—immediate vs. delayed. We applied inverse probability of treatment weighting (IPTW) using propensity scores to adjust for systematic differences.

**Results:** Immediate reconstruction was associated with a significantly higher risk of early complications. Reimbursement occurred in 6.4% of immediate cases versus 5.1% of delayed cases (OR 1.35, 95% CI: 1.18-1.54,  $p = 0.0037$ ), representing the largest absolute difference observed and a clinically meaningful increase in early postoperative burden. Immediate reconstruction also showed significantly higher rates of infection (OR 1.25, 95% CI: 1.06-1.46,  $p = 0.0054$ ) and overall reoperation within 30 days (OR 1.28, 95% CI: 1.16-1.41,  $p < 0.0001$ ), although the absolute percentage differences were minimal (+0.2%). Postoperative mortality (e.g., flap abuse, intra-abdominal infection, or seroma) occurred in 9.6% of immediate vs 9.3% of delayed cases (OR 1.41, 95% CI: 1.01-1.97,  $p = 0.043$ ).

**Conclusions:** In patients with similar health profiles, immediate and delayed free flap reconstructions demonstrate largely comparable complication rates. Immediate reconstruction was associated with a slightly higher risk of early postoperative events, but the absolute differences were small and clinically marginal. These findings suggest that immediate reconstruction remains a safe and effective option. Surgical planning should be individualized based on patient preferences, and comorbidities.

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Abstract No.: 117

**Title :** Sentinel vascular fraction : improves breast sensitivity after mastectomy, particularly in post-radiotherapy patients

**Introduction:** Breast sensitivity after autologous breast reconstruction is reduced due to nerve damage following mastectomy. Despite growing awareness of the impact of innervate breast skin on patient satisfaction and quality of life, targeted nerve repair techniques such as nerve coaptation are not yet standard practice due to practical challenges, including increased operative time, potential donor site morbidity, and a lack of standardized protocols. Emerging regenerative strategies offer new possibilities. Neuroprotective and antifibrotic properties of adipose derived Stromal Vascular Fraction (SVF) might benefit the diminished breast sensitivity in mastectomy patients.

The aim of this study was to analyze whether the injection of lipconcentrate containing SVF in vicinity to the remaining intercostal nerves and in the subcutaneous plane leads to a significant improvement of the post-mastectomy and post-reconstructive sensation of the breast skin and reconstructed NAC compared to spontaneous reinnervation.

**Materials and Methods:** This was a single centered, single-blinded, prospective study conducted at a University Hospital between 1 May 2020 and 31 December 2024. 60 reconstructed breasts using autologous flaps with lipconcentrate containing SVF were injected at the intercostal spaces (3 x 3 mL) and the subcutaneous tissues of the mastectomy skin (5 mL) at the time of reconstructive surgery (n = 31). Control patients underwent the same reconstruction without SVF injection (n = 29). Sensory recovery was assessed one year postoperatively using Semmes-Weinstein monofilament testing. SPSS software was used for the statistical analyses.

**Results:** SVF-treated patients showed significantly improved breast sensation compared with controls (p = 0.033). The effect was most pronounced in patients with a history of radiotherapy (p = 0.017).

**Conclusions:** Injection of lipconcentrate containing SVF during autologous breast reconstruction significantly improves breast skin sensation, particularly in patients who underwent prior radiotherapy. Further research with long-term follow-up is needed. SVF may serve as a promising regenerative strategy to enhance sensory recovery.

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Abstract No.: 197

**Title :** The evolution of a robot assisted DIEP flap protocol: From TAPP to TEP and back to TAPP

**Introduction:** With the introduction of surgical robotics, new options have emerged to further minimize donor site morbidity in DIEP flap breast reconstruction. A robotic DIEP flap harvest can be performed using either the Transabdominal Preperitoneal (TAPP) or the Totally Extraperitoneal (TEP) plane. The TEP approach avoids entering the abdominal cavity and lowers the risk of intra-abdominal complications but is technically more difficult. This study compares surgical outcomes of both approaches and describes the evolution of our robotic DIEP flap protocol.

**Materials and Methods:** A retrospective analysis was conducted of 38 robot-assisted DIEP flap breast reconstructions between 27/08/2020 and 01/10/2025. 20 reconstructions used the TAPP approach and 18 the TEP approach. All surgeries were performed by the same surgeon.

Postoperative analysis was conducted of 38 robot-assisted DIEP flap breast reconstructions between 27/08/2020 and 01/10/2025. 20 reconstructions used the TAPP approach and 18 the TEP approach. All surgeries were performed by the same surgeon.

Primary outcomes included mean operative time, mean robot-assisted time and later to a modified TAPP approach with epigastric port placement and peritoneal closure while the flap remained in place. This offers additional time saving, also and especially in a bilateral procedure. Primary outcomes included mean operative time, mean robot-assisted time and later to a modified TAPP approach with epigastric port placement and peritoneal closure while the flap remained in place. This offers additional time saving, also and especially in a bilateral procedure. Primary outcomes included mean operative time, mean robot-assisted time and later to a modified TAPP approach with epigastric port placement and peritoneal closure while the flap remained in place. This offers additional time saving, also and especially in a bilateral procedure. Primary outcomes included mean operative time, mean robot-assisted time and later to a modified TAPP approach with epigastric port placement and peritoneal closure while the flap remained in place. This offers additional time saving, also and especially in a bilateral procedure. Primary outcomes included mean operative time, mean robot-assisted time and later to a modified TAPP approach with epigastric port placement and peritoneal closure while the flap remained in place. This offers additional time saving, also and especially in a bilateral procedure.

**Results:** Mean total operative time was similar for TEP and TAPP (450 vs. 453 minutes; p=0.636) but improved from the modified TAPP approach (410 minutes). Mean docking time was slightly shorter in TAPP (33 vs. 41 minutes, p=0.193), while mean robot-assisted time was shorter in TEP (50 vs. 76 minutes, p=0.001). In the modified TAPP group, mean robot-assisted time decreased by 26 minutes. Three postoperative complications occurred in the TAPP group and two in the TEP group. Each group had one intraoperative adverse event, and two TEP procedures were converted to TAPP.

**Conclusions:** Both approaches are feasible, but the TEP technique is technically challenging. The modified TAPP approach reduced operative and robotic times, making it our preferred method.

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Abstract No.: 206

**Title :** Comparison of postoperative breast sensation between different flap types for innervated autologous breast reconstruction

**Introduction:** Sensory nerve coaptation enhances sensation after autologous breast reconstruction, significantly improving quality of life. While the Deep Inferior Epigastric Perforator (DIEP) flap is the gold standard, many patients require alternatives such as the stacked hemiabdominal extended perforator (SHAP), lateral thigh perforator (LTP), superior gluteal artery perforator (SGAP), diagonal upper gracilis (DUG), and lumbar artery perforator (LAP) flaps. However, sensory recovery in these alternatives remains unstudied. As breast sensation critically affects reconstructive outcomes, patients need realistic expectations regarding sensory recovery after innervated reconstruction. This study compares breast sensation among different autologous flaps with sensory nerve coaptation.

**Materials and Methods:** A single-center cross-sectional study included female patients aged 18 years or older who underwent therapeutic or prophylactic mastectomy followed by innervated autologous free flap reconstruction at least seven months postoperatively. Sensory testing used Semmes-Weinstein Monofilaments (SWM), Pressure Specified Sensory Device (PSSD), and a thermosimulator for thresholds and temperature thresholds. Multivariate linear regression analyzed breast sensitivity across five flap groups, using DIEP as the reference, adjusted for postoperative time and BMI.

**Results:** Fifty-eight patients (95 innervated breasts) were included: 15 DIEP (23 breasts), 8 DUG (14), 9 SHAP (17), 10 LTP (17), 7 SGAP/SG-GAP (12), and 9 LAP (12). LTP showed the best sensory outcomes in both native and flap skin by SWM, while DUG had the poorest. Except for DUG, all groups outperformed DIEP in static PSSD. DUG performed worst, while LTP and SGAP/SG-GAP had lower thresholds, with LTP the best. In dynamic PSSD, LTP performed best, and all groups, including DUG, surpassed DIEP. tactile and temperature testing confirmed DIEP had the poorest protective sensation, while LTP and SGAP/SG-GAP had the best.

**Conclusions:** Despite the small sample size, DIEP flaps showed poorer sensory outcomes than other flaps. LTP and SGAP/SG-GAP demonstrated the best recovery. Interestingly, these findings contrast prior research, which favored DIEP for donor-site sensation.

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Abstract No.: 243

**Title :** The Delta Flap Technique: Expanding Nipple Reconstruction Options for Central Post-Mastectomy Scars

**Introduction:** Nipple reconstruction (NR) on pre-existing scars represents a well-recognized challenge, as scarring compromises local tissue mobility and vascularity, often leading to suboptimal projection and aesthetic outcomes. This study aims to evaluate the Delta flap technique, a novel approach for NR designed to address centrally-located post-mastectomy scars that intersect the ideal site for the neo-nipple.

**Materials and Methods:** A prospective study was conducted including patients with central post-mastectomy scars scheduled for NR using the Delta flap (Group-A) and a control group undergoing traditional C.V flap NR (Group-B). Nipple projection loss over time was compared by comparing immediate and 6-month postoperative measurements. Operative time, complications, time elapsed since the major reconstructive procedure, and follow-up duration were analysed using Student's t-test with Welch-correction. Patient and surgeon aesthetic evaluations were assessed using the Chi-square test.

**Results:** A total of 25 nipples were included in each group (39 patients). Follow-up duration was comparable (6.6±0.70 vs. 6.48±0.65 months; p=0.561). NR was performed at similar intervals after the major procedure (8.2±1.57 vs. 8.0±2.25 months; p=0.456). At 6-months, nipple projection was similar, being 7.8±2.11 mm in Group-A and 7.48±1.61 mm in Group-B (p=0.367). However, percentage projection maintenance was significantly higher in Group-A (59.6±10.12 vs. 54.82±10.11; p=0.042). Operative time (35.79±7.25 vs. 35.15±6.25 min; p=0.467) and complication rates (10.5±3.37% vs. 10.5±3.37% respectively; despite aesthetic evaluation revealed no significant differences in shape (7.8±1.14 vs. 7.8±1.19; p=0.452), projection (7.96±1.24 vs. 7.52±1.16; p=0.101), or overall score (40.36±5.20 vs. 38.84±5.39; p=0.157), symmetry with the contralateral nipple was significantly superior in Group-A (8.28±1.10 vs. 7.6±1.11; p=0.023). Group-A patients were also more likely to recommend their procedure (8.4±0.97 vs. 8.0±0.85; p=0.015).

**Conclusions:** The Delta flap represents an innovative, safe, and reproducible approach to nipple reconstruction. Its versatile design effectively addresses the challenge of centrally-located scars, providing an anatomically refined and aesthetically harmonious solution that ensures long-term projection stability and overall breast symmetry.

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Abstract No.: 273

**Title :** Sensotopic reorganization after innervated breast reconstruction: a 7T functional MRI study

**Introduction:** Contemporary breast reconstruction aims to restore not only breast shape but also recovery sensation. However, the critical effects of breast amputation and reconstruction on unexplored. Understanding how cortical processing adapts after mastectomy and reconstruction may redefine our understanding of sensory recovery in breast reconstruction.

**Materials and Methods:** 34 patients were divided into three groups: mastectomy, innervated Deep Inferior Epigastric Perforator Flap (DIEP+), non-innervated DIEP flap (DIEP-), and innervated standardized Semmes-Weinstein flaps (DIEP+). 7 Tesla functional MRI during vibrotactile stimulation of four breast areas: two quadrants, the reconstructed nipple-area, and contralateral healthy nipple. fMRI recovery in the primary somatosensory cortex (S1) was analyzed and compared across groups.

**Results:** Tactile sensitivity was significantly higher in DIEP+ compared to DIEP- and mastectomy groups, and correlated with brain activity. Stimulation sites affected activation in the primary somatosensory cortex. In DIEP+, the reconstructed nipple-area (NA) showed a distinct and selective cortical representation that closely resembled that of the contralateral healthy nipple. This pattern was absent in DIEP- and mastectomy groups, suggesting that only innervated flaps provide the nipple as a separate sensory unit.

**Conclusions:** Innervated DIEP flaps restore not only recovery, but also the brain's representation of the breast. These findings provide compelling evidence that innervation of DIEP flaps promotes cortical reorganization. By linking neural sensory recovery to cortical reorganization, this study introduces a novel perspective on breast sensitivity after innervated breast reconstruction.

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Abstract No.: 284

**Title :** Use of fascia lata for subpectoral breast reconstruction instead of acellular dermal matrices (ADM): a series of patients

**Introduction:** Acellular dermal matrices (ADM) have a high cost and are of alloplastic or xenoplastic origin. We present the use of fascia lata instead of ADMs for subpectoral direct-to-implant or expander-based breast reconstruction.

**Materials and Methods:** In this series of 15 breasts; the mean age of the patients (n=13) was 52. The breast cup was the A (n=1), B (n=13) and C (n=1). We used fascia lata as the patients were concerned with the cost and extra non-autologous material use. In every case, a longitudinal incision 10 cm long was performed at the lateral thigh stopping 15 cm above the lateral border of the pectoralis. The grafts harvested ranged from 5x13cm to 6x15cm. The pectoralis muscle was dissected at the inframammary fold from the 4th up to the 8th hour and the expander or implant was inserted underneath. For the direct to implant reconstruction (n=13) we used round smooth implants in 6 breasts and anatomical microtextured breasts in the rest 7. One breast with tissue expander and 1 with implant were submitted to postoperative radiotherapy.

**Results:** A total of 25 nipples were included in each group (39 patients). Follow-up duration was comparable (6.6±0.70 vs. 6.48±0.65 months; p=0.561). NR was performed at similar intervals after the major procedure (8.2±1.57 vs. 8.0±2.25 months; p=0.456). At 6-months, nipple projection was similar, being 7.8±2.11 mm in Group-A and 7.48±1.61 mm in Group-B (p=0.367). However, percentage projection maintenance was significantly higher in Group-A (59.6±10.12 vs. 54.82±10.11; p=0.042). Operative time (35.79±7.25 vs. 35.15±6.25 min; p=0.467) and complication rates (10.5±3.37% vs. 10.5±3.37% respectively; despite aesthetic evaluation revealed no significant differences in shape (7.8±1.14 vs. 7.8±1.19; p=0.452), projection (7.96±1.24 vs. 7.52±1.16; p=0.101), or overall score (40.36±5.20 vs. 38.84±5.39; p=0.157), symmetry with the contralateral nipple was significantly superior in Group-A (8.28±1.10 vs. 7.6±1.11; p=0.023). Group-A patients were also more likely to recommend their procedure (8.4±0.97 vs. 8.0±0.85; p=0.015).

**Conclusions:** The Delta flap represents an innovative, safe, and reproducible approach to nipple reconstruction. Its versatile design effectively addresses the challenge of centrally-located scars, providing an anatomically refined and aesthetically harmonious solution that ensures long-term projection stability and overall breast symmetry.

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Abstract No.: 358

**Title :** Optimization of autologous adipose tissue transplantation: The impact of patient-specific and intraoperative factors on cellular viability before and after cryopreservation

**Introduction:** Autologous adipose tissue regeneration is a well-established and versatile technique in aesthetic, reconstructive, and regenerative surgery. Cryopreservation of adipose tissue harvested during liposuction reduces the need for repeated collections, thereby minimizing patient discomfort while maintaining volumetric and regenerative properties. However, no studies have yet correlated cell viability before and after thawing, with patient-specific characteristics and procedural variables. This study investigates these factors to refine patient selection and optimize harvesting protocols.

**Materials and Methods:** A retrospective analysis was conducted on 55 patients from October 2023 to June 2024. Clinical variables included age, sex, smoking status, comorbidities, and ongoing therapy (antibiotic, hormonal, and immunological). Intraoperative factors considered were type of dissection, anesthesia, number of surgical teams involved, associated procedure, duration of surgery, harvesting site, and collected volume. Cell count and metabolic activity were assessed both pre- and post-cryopreservation (lipobank 8) using standardized viability and metabolic assays.

**Results:** No statistically significant differences were found between fresh and thawed samples in terms of overall cellular viability ( $p = 0.858$ ), with a mean viability index exceeding 92% in both groups. However, hormonal therapy showed a significant correlation with reduced metabolic activity and cell viability in both fresh ( $p = 0.046$ ) and thawed ( $p = 0.049$ ) adipose tissue. Patients undergoing androgenic hormonal treatment—such as exogenous testosterone, testosterone replacement, or androgen therapy—demonstrated a lower mean viability index (91.3% ± 5.3 fresh; 91.0% ± 5.2 thawed) compared with untreated patients (94.2% ± 4.9 fresh; 94.0% ± 4.7 thawed). No significant associations were identified between adipose tissue vitality (fresh or thawed) and chemotherapy, immunotherapy, or radiotherapy.

**Conclusions:** The findings highlight the detrimental effect of androgenic hormonal therapy on adipose tissue quality and emphasize the importance of timing therapeutic regimens when planning fat harvesting. Optimizing harvesting protocols may enhance graft viability, reduce resorption, and improve volumetric and regenerative outcomes in autologous adipose transplantation.

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Abstract No.: 381

**Title :** Thoracoaxillary Artery Perforator Flap: A Valuable Tool in Modern Breast Reconstruction

**Introduction:** Since its introduction in the early 2000s, the thoracoaxillary artery perforator (TDAP) flap has evolved from a muscle-sparing modification of the latissimus dorsi flap into a versatile, pure perforator option for partial and total breast reconstruction and beyond. Progressive refinements, from pedicled to extended, propeller, island, and free-flap configurations, have broadened its indicators while preserving donor-site function. This study presents a single-center experience illustrating the clinical maturity and versatility of the TDAP flap.

**Materials and Methods:** A retrospective review of 132 thoracoaxillary artery perforator flaps performed between 2011 and 2024 was conducted, focusing primarily on breast reconstruction. Patient demographics, reconstructive indications, flap design and complications were analyzed. The series was placed within a chronological framework tracing the evolution of the TDAP flap—from a purely autologous perforator flap to a key adjunct in direct-to-implant breast reconstruction.

**Results:** The mean patient age was 51 years and the mean BMI 24.4 kg/m<sup>2</sup> (1 female, 126 female, 16.6% smokers, 0 of 132 TDAP flaps, 106 were used for total breast reconstruction—mostly immediate, implant-assisted single-stage procedures, 14 for partial breast defects, and 12 for other reconstructions (8 upper-extremity, 4 thoracic, 1 total torso flap, 2 lymphoedema implants). Conventional island and extended designs predominated. Refinements in perforator selection, flap design, shaping improved implant adaptation, and donor-site closures using standardized TDAP as a reliable option for direct implant reconstruction.

**Conclusions:** Breast reconstruction should be individually planned to meet each patient's anatomy and expectations while minimizing morbidity. The TDAP flap remains a reliable and versatile option. It provides excellent outcomes in both total autologous and hybrid (implant) breast reconstruction, particularly for patients with limited donor sites or those wishing to preserve implant-based reconstruction. TDAP should be preserved as a valuable tool in the contemporary breast reconstruction armamentarium.

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Abstract No.: 383

**Title :** Sensory Outcomes of Direct-to-Implant Breast Reconstruction with Targeted Nipple Areola Complex Reinnervation (TNR): A Multicenter Prospective Controlled Cohort Study

**Introduction:** Loss of sensation and persistent breast pain following breast reconstruction can lead to significant patient morbidity. This study evaluated sensory and pain outcomes following targeted nipple-areola complex (NAC) reinnervation (TNR), a technique designed to preserve and reconstruct intercostal nerves during mastectomy with implant-based breast reconstruction.

**Materials and Methods:** This multicenter prospective study of patients undergoing direct-to-implant breast reconstruction compared subjects who underwent TNR to controls who did not. Objective sensation was assessed preoperatively and at 3 and 12 months postoperatively using Quantitative Sensory Testing. Patient-reported outcomes were collected preoperatively and at 1, 3, 6, 9, and 12 months using the BREAST-Q Sensation and Breast Symptoms modules and the PROMIS NeuroScreen Pain Quality scales.

**Results:** A total of 64 patients, including 37 subjects (69 breasts) and 27 controls (45 breasts) were included with statistically comparable age, BMI, mastectomy weight and implant size. Subjects had significantly improved sensory detection compared to controls starting at 3 months postoperatively for light touch at the NAC (6.2±0.6 vs 6.4±0.3; p=0.004) and breast (5.3±0.2 vs 6.1±0.2; p=0.004), two-point discrimination at the breast (7.1±2.1cm vs 8.9±1.0cm; p=0.029), pinprick at the breast (21.8±7.2mm vs 36.4±12.7mm; p=0.012), pressure pain at the breast (102.3±36.7kPa vs 158.5±40.6kPa; p=0.021), and cold at the breast (12.6±0.7°C vs 13.4±0.7°C; p=0.009), and starting at 12 months for pinprick at the NAC (24.3±12.2mm vs 48.8±47.6mm; p=0.009). Two-point discrimination and pressure pain at the NAC, as well as warm and heat pain at the NAC, and breast tenderness and intrasubject comparison between both groups. Starting at 12 months postoperatively, subjects had significantly higher mean scores on the BREAST-Q Sensation (47.9±9.9 vs 31.4±14.7; p=0.001) and Breast Symptoms (86.7±12.2 vs 76.1±12.2; p=0.037) modules and reported significantly less chronic pain and neuropathic pain (11.8% vs 47.6%; p=0.018).

**Conclusions:** TNR during implant-based breast reconstruction significantly improved objective and patient-reported sensation and resulted in less chronic pain.

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# SESSION 7

## THE BODY WORKS



**Abstract No.:** 17

**Title:** Virtual Reality assisted planning for the separation conjoined twins using composite myocutaneous flaps form the fused limb to close trunk wall defects

**Introduction:**

The separation of conjoined twins represents one of surgery's most complex processes. Trunk wall defects after separation pose a significant challenge. Ichiopagan, omphalopagus and parapagus twins often have three limbs, a shared limb being fused and has little potential for future function. We describe how the fused mermaid lower limb was utilised to close the large trunk defects and the advances in technology that assisted in planning and performing the successful separation of two sets of twins seven years apart.

**Materials and Methods:**

In two similar sets of conjoined twins we present how two large composite myo-cutaneous flaps were raised from the fused non functional mermaid lower limb and used to reconstruct the pelvic, abdominal and thoracic defects following separation. Extensive imaging was performed which assisted in planning the first set of twins. The technological advances seven years later allowed virtual reality and 3-D modelling to significantly aid planning and preparation for the separation of the second set of twins.

**Results:**

Both sets of similar twins were successfully separated and the use of the large myo-cutaneous flaps used to close the pelvic, abdominal and thoracic defects reducing the need for prolonged intubation and laparoscopic recovery. The preparation and planning was improved with virtual reality and 3-D modelling giving greater surgical confidence during successful separation.

**Conclusions:**

Conjoined twin separation is a complex surgical and ethical process. The mermaid limb myo-cutaneous flaps assisted the closure of the trunk defect. Advances in imaging, 3-dimensional skeletal-vascular modelling, augmented virtual reality greatly enhanced planning of the approach by the MDT and preparation for the separation of the second set of twins.

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**Abstract No.:** 26

**Title:** Single-Unit Experience in the Use of Periosteal and Corticoperiosteal Bone Grafts in Acute Lower-Limb Trauma

**Introduction:**

Segmental bone loss after acute lower-limb trauma presents a major reconstructive challenge, with risks of non-union, infection, and amputation. Conventional methods such as bone transport, cancellous grafts, or the Masquelet technique may be less effective in contaminated wounds or when prolonged reconstruction is impractical. Vascularised periosteal and corticoperiosteal flaps provide a biological envelope that may enhance bone healing and reduce infection risks.

**Materials and Methods:**

A retrospective review was performed of 15 patients with acute traumatic bone loss treated at a UK major trauma centre. All underwent combined orthoplastic reconstruction including definitive fixation, soft-tissue coverage, and vascularised periosteal or corticoperiosteal flap transfer in a single stage. Outcomes assessed included union, infection, revision procedures, and amputation.

**Results:**

All 15 patients achieved bony union, with a mean time to union of 6 months. No amputations occurred. Three patients developed infection, all managed successfully with debridement and without flap loss. One patient required re-exploration for venous congestion. The overall revision rate was approximately 13%.

**Conclusions:**

Vascularised periosteal and corticoperiosteal flaps are a valuable adjunct in the acute management of traumatic bone loss. They promote reliable union and maintain low infection and amputation rates, broadening reconstructive options when bone transport or staged techniques are unsuitable.

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**Abstract No.:** 88

**Title:** Flap reconstruction of extremity arterio-venous malformations (AVMs): strategies and outcomes from a retrospective case series

**Introduction:**

Arteriovenous malformations (AVMs) of the extremities are rare vascular anomalies associated with major morbidity and high recurrence. Their management remains controversial, with no standardized strategy. We review 15 years of experience presenting our structured protocol that emphasizes early surgical excision and tailored flap reconstruction, supported by a multidisciplinary pathway.

**Materials and Methods:**

We retrospectively reviewed 18 patients (7 males, 11 females; age 15-59 years) treated for extremity AVMs between 2010 and 2024 at our institution. The subunits involved were as follows: hand and forearm (17/3%), only hand (2/8%), foot and ankle (18/8%), only foot (12/3%), foot, ankle and leg (6/33%). All cases required flap reconstruction following excision. Surgical management consisted of: (1) preoperative embolization when indicated, (2) radical excision with the pineapple technique, (3) reconstruction preferentially with pedicled flaps or, when necessary, hybrid free flaps with venous bridging to reduce thrombotic risk, and (4) structured follow-up and re-treatment in case of recurrence.

**Results:**

Indications for surgery included pain, bleeding, numbness, and chronic ulceration. The most used flaps were pedicled (62.2%). Free flaps were chosen in 37.5% of cases, with a preference for hybrid free flaps with venous bridging (25%) over conventional cross leg free flaps. The most commonly used flap, both as pedicled and as free, was the ALT (81.3%), followed by the groin flap (12.5%) and the LD (6.2%). Flap reconstruction achieved 100% survival. Complications occurred in 38% of cases, while recurrence was also 36%, all successfully treated with protocol-driven re-excision and reconstruction.

**Conclusions:**

Our standardized protocol, combining radical excision with the pineapple technique and optimized reconstruction, minimizes thrombotic risk and ensures durable functional results. These findings support the broader adoption of an aggressive, algorithm-based approach to improve outcomes in this complex patient population.

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**Abstract No.:** 270

**Title:** Limitations of the Distal AIN-to-Ulnar Motor Branch Nerve Transfer for Pinch Restoration: A Case Series

**Introduction:**

The distal anterior interosseous nerve (AIN) to ulnar motor branch transfer, as described by McKinnon, is widely adopted for intrinsic muscle reinnervation following high ulnar nerve injury. While it offers a short regeneration distance, its effectiveness in restoring full pinch function remains debated. This study critically evaluates functional outcomes in a series of patients who underwent this transfer.

**Materials and Methods:**

Eight patients with ulnar nerve injuries proximal to the upper third of the forearm underwent distal nerve transfer of the AIN branch to pronator quadratus (PQ) to the ulnar motor branch at wrist level. Pre- and post-operative functional assessments included assessment of clawing, finger abduction/adduction strength (MRC grading), key pinch strength, and presence of Froment's sign.

**Results:**

Finger abduction and adduction recovered to M4 in all but one patient, and mild clawing was absent in seven cases. However, substantial key pinch strength averaged only 0.8 kg. Froment's sign remained positive in six of eight patients. No donor site morbidity was observed.

**Conclusions:**

Recovery of intrinsic function indicates that the nerve transfer effectively reached the correct ulnar motor fascicles. However, consistently poor reinnervation of the first dorsal interosseous suggests it may be the most distal and least likely to receive sufficient regenerating axons. This contrasts with direct nerve repairs at the wrist, which appear to deliver a higher axonal load. Our findings challenge the assumption that this transfer alone can restore functional pinch and suggest that combining it with a more distal, selective motor transfer—such as opponents to first dorsal interosseous—may be necessary for optimal outcomes.

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**Abstract No.:** 271

**Title:** Nerve Transfers for Radial Nerve Palsy: Clinical Results from a Prospective Case Series

**Introduction:**

Tendon transfers are the traditional approach for restoring function in radial nerve palsy, but they disrupt native biomechanics and limit functional refinement. Nerve transfers provide a physiological alternative that preserves joint mechanics and enables selective muscle reinnervation. This study presents the clinical outcomes of nerve transfers in patients with radial nerve palsy.

**Materials and Methods:**

A prospective case series included six patients (aged 25-52 years) with radial nerve palsy, presenting 3 to 8 months post-injury. The following nerve transfers were performed: (1) distal branch of the pronator to the extensor carpi radialis brevis (ECRB), (2) branch of the flexor carpi radialis (FCR) to the posterior interosseous nerve (PIN), and (3) distal anterior interosseous nerve (AIN) branch to the pronator quadratus to the distal PIN for selective reinnervation of wrist, elbow, and EPL. Patients were followed for 15 months. Outcome measures included APL, Finger and thumb extension MRC grading, range of motion (ROM), donor site morbidity, and complications.

**Results:**

All six patients regained active wrist extension, with a mean wrist extension of 62° and MRC grade 4 strength. Full finger extension with the wrist extended was achieved in all cases (MRC 4). Thumb extension at the CMC and IP joints was complete in all but two patients. At the MCP joint, four patients achieved full extension, while two showed an extension lag of 25°. No loss of donor function was observed; pronation and wrist flexion strength remained unchanged compared to preoperative status while no surgical complications occurred.

**Conclusions:**

Distal nerve transfers offer reliable restoration of wrist, finger, and thumb extension in radial nerve palsy, with high functional recovery and preservation of donor site strength. These preliminary results support nerve transfers as an effective alternative to tendon-based reconstruction. Controlled comparisons with outcomes following tendon transfers are needed to further validate these findings.

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**Abstract No.:** 280

**Title:** Beyond Limits: Keystone Flaps in Challenging and Hostile Surgical Fields

**Introduction:**

The keystone flap is a fasciocutaneous advancement flap that recruits multiple unanatomized perforators without tedious dissection, redistributes tension, and preserves longitudinal lymphatic-venous flow—advantages critical in complex reconstructive settings. Hypothesis: unanatomized "islanding" and dermatomal alignment enhances flap perfusion, providing a rescue strategy when vascular risk or tight closure limits standard designs. This study analyzes the safety and efficacy of keystone flaps in challenging, hostile environments.

**Materials and Methods:**

A retrospective review of 265 patients treated with 382 keystone flaps between September 2018 and September 2024 was performed. We analyzed 38 patients (14.3%) exhibiting one or more hostile environment parameters: hardware exposure, active or recent infection, prior chemoradiotherapy, extensive scarring, or poor skin quality. Patient demographics, defect characteristics, surgical modifications, and outcomes were evaluated, with a minimum follow-up of one year.

**Results:**

Distribution was 34.2% lower extremity, 16.2% upper extremity, 18.4% head and neck, and 28.9% trunk. Etiologies included hardware exposure (18.4%), infection (34.2%), chemo-radiation (16.2%), and scarring (28.3%). Two or more hostile factors were noted in 31.5% of patients, while 63.1% had one or more comorbidities. Type II keystone was the most prevalent (65.8%), and flap modifications were performed in 57.8%. Complications occurred in 18.4% of this subgroup: haematomas, seroma, and partial flap loss. All were treated conservatively, without additional surgeries.

**Conclusions:**

Keystone flaps provide a reliable, resource-efficient reconstructive option in hostile environments. Their robust perfusion, versatility, and minimal resource demands make them valuable for managing complex wounds, including infected, irradiated, and multiply operated fields.

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**Abstract No.:** 344

**Title:** Free functional gracilis transfer for restoration of shoulder flexion

**Introduction:**

Paralysis of the shoulder can result from upper brachial plexus lesions or isolated axillary nerve injury. Timely nerve reconstruction is the gold standard for good functional outcome. Delayed patient presentation or insufficient reconstruction may lead to unsatisfactory results with limited muscular force and range of motion and pain due to shoulder instability. Furthermore, isolated distal axillary nerve lesions are sometimes difficult to address surgically. To improve functional outcome in these patients, we performed a free functional gracilis transfer to facilitate active shoulder flexion and stability.

**Materials and Methods:**

Nine patients with either posttraumatic isolated axillary nerve injury or upper brachial plexus lesions were prospectively assessed for shoulder stability, range of motion, semi-quantitative muscle strength and pain. A free functional gracilis muscle transfer was performed to replace the paralyzed anterior deltoid muscle to regain shoulder flexion. Different donor nerves were used for reinnervation. Follow-up investigations included functional clinical assessments, the Disability of the Arm, Shoulder and Hand questionnaire, as well as electromyographic evaluation of reinnervation.

**Results:**

Flap survival rate was 100%. Shoulder instability could be reduced in all patients. Postoperative shoulder pain levels were reduced in five patients. Six patients had a clear improvement of range of motion and muscle strength. The muscle transfer showed first signs of reinnervation after 3 months. DASH scores showed a median of 36.2. Outcome was favorable in patients with isolated axillary nerve injuries compared to brachial plexus palsies.

**Conclusions:**

For secondary reanimation of the shoulder joint after plexus or axillary nerve lesions the gracilis muscle can be used to improve shoulder stability and reduce pain. Furthermore, better range of motion can be achieved, preferably in patients with isolated nerve injury.

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**Abstract No.:** 364

**Title:** An Update on Lessons Learned after Conjoined Twin Separation: A Fifteen-Year Single Institution Review

**Introduction:**

Conjoined twin separation presents unique reconstructive challenges, requiring extensive planning and multidisciplinary collaboration. At our institution we have separated 32 pairs in the last 44 years. We review the last 15 years, highlighting outcomes and the evolution of surgical planning, techniques, and execution.

**Materials and Methods:**

A retrospective review was conducted of conjoined twin separations involving plastic surgery (January 2011 - December 2024). Conjoinment details, comorbidities, reconstructive pathway, and postoperative outcomes were collected.

**Results:**

Of 13 separations, 9 involved plastic surgery (5=thoraco-omphalopagus, 1=thoraco-omphalo-ischioepagis, 1=cranioepagis, 1=pyopagus). Tissue expanders (TE) were placed at a mean age of 4.5 months, remaining in place for an average of 4.9 months. TE-related complications occurred in five sets (dehiscence=4, seroma=4, migration=3), requiring an average of 1.4 reoperations (range, 1-3).

Separations were performed at a mean age of 9.4 months (range, 7-13). Postoperative complications included wound healing delay in three patients, and confirmed bowel perforation in one set, necessitating three reoperations in each twin.

Wound care was consulted during inpatient management from 2016 onward (n=7 sets); earlier cases had wound care involvement without formal consultation. Overall survival was 88.9% (16/18); two patients in separate sets passed due to comorbid conditions.

**Conclusions:**

Tissue expansion in a population with limited mobility carries substantial complication risks. Comorbidities may delay separation and compromise survival. At our institution, advances in team preparedness, wound care, and reconstructive strategies have contributed to successful separations.

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**Abstract No.:** 367

**Title:** ARTERIAL INJURY PATTERNS AND RECONSTRUCTION OUTCOMES IN OPEN LOWER LIMB FRACTURES: A SINGLE MAJOR TRAUMA CENTER EXPERIENCE

**Introduction:**

Arterial injury plays a critical role in determining the success of lower limb reconstruction. This study aimed to evaluate the differential impact of arterial injury on free and local flap outcomes.

**Materials and Methods:**

A retrospective review of 816 cases of lower limb reconstruction was conducted, including 119 cases with arterial injuries. Free and local flap outcomes were compared using statistical analysis, with specific attention to complications and their relationship to injury energy levels and polytrauma status.

**Results:**

Free flap complications were significantly higher in cases with arterial injury (7.56%) compared to those without (1.58%), reflecting a nearly fivefold increase. In contrast, local flap complications were slightly lower in cases with arterial injury (0.84% vs. 1.43%). High-energy injuries and polytrauma demonstrated strong associations with arterial injury ( $p < 0.00001$  for both), while patient comorbidities such as COPD, ischemic heart disease (IHD), and smoking were not significantly related.

**Conclusions:**

Arterial injury substantially increases the risk of complications in free flaps, underscoring the need for comprehensive vascular management and early intervention, particularly in high-energy trauma cases.

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**Abstract No.:** 373

**Title:** Thinned, Intra-axillary and Submuscular Tunneled Circumflex Scapular Artery Perforator Flap for Axillary Hidradenitis Suppurativa

**Introduction:**

Wide excision of severe axillary hidradenitis suppurativa (HS) creates substantial defects in a functionally complex region lacking standardized approaches. This study evaluates a novel technique using a horizontally oriented, thinned circumflex scapular artery perforator (CSAP) flap with submuscular tunneling for axillary reconstruction.

**Materials and Methods:**

Between January and June 2025, 15 patients with Hurley stage III axillary HS underwent wide excision followed by CSAP flap reconstruction. Subfascial dissection over latissimus dorsi (LD) after excision facilitated direct visualization of an omoricorpicl triangle, enabling perforator identification without Doppler mapping. The distal two-thirds of the flap were elevated above the superficial fascia to achieve thinning, while 2-3 cm of tissue surrounding the perforator remained intact to protect the proximal subfascial segment. Retrograde pedicle dissection (5-7 cm) permitted tension-free tunneling beneath LD and over major axons. Outcomes were prospectively collected and retrospectively analyzed, including demographics; defect, flap, and excised tissue dimensions, complications, satisfaction scores as Dermatology Life Quality Index (0-25 scale), and shoulder mobility.

**Results:**

The cohort comprised predominantly males (14/15) with mean age 36 years and mean BMI 30 (range 16.7-44.8). Mean defect size measured 122 cm<sup>2</sup>; mean flap area was 127 ± 9 cm<sup>2</sup>. Thinned flaps (mean 1.6 cm) were significantly thinner than excised tissue (2.3 cm), providing supple insets with natural contour. Complete flap survival was achieved (100%). Minor complications occurred in 3/15 patients, managed conservatively. Submuscular tunneling preserved superior axillary anatomy while minimizing bulk. Patient satisfaction improved dramatically (mean 16.9 → 2.3), and shoulder abduction was enhanced universally. At mean 7-month follow-up (range 4-12 months), no recurrence or functional impairment was documented.

**Conclusions:**

The thinned, submuscular tunneled CSAP flap offers reliable vascularization, superior volumetric matching, and aesthetically favorable results. Its consistent anatomy and controlled distal thinning establish it as a robust reconstructive option for axillary HS, particularly in high-BMI patients requiring less bulk in the axillary region.

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**Abstract No.:** 389

**Title:** PREDICTORS OF FLAP FAILURE IN LOWER EXTREMITY RECONSTRUCTION: A MAJOR TRAUMA CENTRE STATISTICAL ANALYSIS

**Introduction:**

Understanding the predictors of flap failure is essential to optimize outcomes in lower limb reconstruction. This study investigates demographic, clinical, and injury-specific factors influencing flap success.

**Materials and Methods:**

A retrospective analysis of 816 cases of lower limb reconstruction was conducted. Multivariate regression identified significant predictors of flap failure, focusing on patient demographics, injury severity, and comorbidities.

**Results:**

Advancing age (coefficient = -0.0304,  $p = 0.012$ ) and obesity (coefficient = +1.5084,  $p = 0.034$ ) were significant risk factors for flap failure. Gustilo Anderson Grade 3 injuries, specifically Grades 3B (coefficient = +3.0165,  $p = 0.006$ ) and 3C (coefficient = +3.2995,  $p = 0.006$ ), were associated with the highest failure risks. Surprisingly, polytrauma cases exhibited a protective effect against failure compared to isolated injuries (coefficient = -1.2681,  $p = 0.046$ ). Traditional risk factors, such as smoking status, diabetes, and hypertension, were not statistically significant predictors. The model demonstrated moderate predictive power (pseudo R-squared = 0.2356), accounting for approximately 23.56% of the variance in flap failure outcomes.

**Conclusions:**

Age, obesity, and severe injury grades are critical predictors of flap failure in lower limb reconstruction. These findings provide valuable insights for surgical planning, highlighting the importance of tailored strategies for high-risk patients while challenging assumptions about traditional risk factors.

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# SESSION 8

## THE BODY BEAUTIFUL



**Abstract No.:** 25

**Title :** Impact of GLP-1 Agonists on Surgical Outcomes in Non-Bariatric Abdominal Panniculectomy: A 10-Year Retrospective Analysis

**Introduction:**

Glucagon-like peptide-1 (GLP-1) agonists not only alter metabolic pathways but may also impact tissue characteristics by affecting fat and skin quality via microvascular effects, which could predispose patients to surgical complications. Conversely, surgery itself might exacerbate known side effects (SEs) of GLP-1 agonists due to stresses associated with major surgical procedures. This study aims to elucidate how these dynamics influence both the incidence of postoperative complications and GLP-1 SEs post-surgery.

**Materials and Methods:**

A retrospective analysis from January 2013 to January 2023 was conducted on 373 panniculectomy patients, with 81 patients on GLP-1 agonists and 292 not. All patients had at least one year of follow-up to capture long-term postoperative outcomes. Baseline characteristics, pre-operative nutrition, and pre-operative GLP-1 therapy duration were assessed. Postoperative complications and GLP-1 associated SEs were compared using logistic regression to control for potential confounding variables.

**Results:**

GLP-1 users had higher prevalences of T2DM (55.6% vs 29.5%), hypertension (69.1% vs 52.7%), and chronic obstructive pulmonary disease (17.3% vs 6.5%). Nutritionally, GLP-1 users showed higher prealbumin levels (22.8 ± 6.6 mg/dL vs 20.4 ± 7.7 mg/dL). After controlling for differences between groups, GLP-1 users exhibited a significantly higher incidence of delayed wound healing (18.5% vs 7.5%, P=0.049) and a lower incidence of seroma (4.9% vs 14.0%, P=0.030).

**Conclusions:**

GLP-1 agonist users experienced higher rates of delayed wound healing but reduced incidence of seroma. While GLP-1 agonists have demonstrated improvement in chronic wound healing, this benefit does not extend to acute wound healing. The findings suggest GLP-1 agonists can be safely used in perioperative periods, though clinicians should remain vigilant about the potential for delayed healing in acute surgical wounds. Additionally, our results support the safety of abdominal panniculectomy in patients treated with these medications, as the procedure does not exacerbate GLP-1-associated SEs.

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**Abstract No.:** 28

**Title :** THE M.I.R.E.L.A. TECHNIQUE (MINIMAL INVASIVE ROBOTIC ENDOSCOPIC LIPOABDOMINOPLASTY) IN THE AESTHETIC BODY CONTOURING TREATMENT.

**Introduction:**

Robotic surgery has gained prominence in recent years and is now being integrated into plastic surgery. The Minimal Invasive Robotic Endoscopic Liposabdominoplasty (M.I.R.E.L.A.) technique utilizes robotic surgery for rectus abdominis diastasis correction, aiming to enhance surgical precision and provide faster postoperative recovery. This study aims to analyze the profile of patients undergoing the procedure and assess the associated clinical findings.

**Materials and Methods:**

A cross-sectional quantitative study was conducted, evaluating 40 patients who sought robotic surgery for diastasis correction between July 2023 and May 2025. Patient data, including surgical history, body composition, and associated conditions, were collected and analyzed.

**Results:**

Among the 20 patients evaluated, 97% (n=39) had a history of previous pregnancies. Additionally, 65% presented with an umbilical hernia, which was repaired during the procedure. The majority (90%) had a body mass index (BMI) within normal limits, while 95% had a preoperative body fat percentage greater than 18%.

**Conclusions:**

This study provides insights into the role of robotic surgery in plastic surgery, particularly in rectus abdominis diastasis correction. The M.I.R.E.L.A. technique demonstrates potential for optimal postoperative outcomes without major scars, offering benefits such as improved surgical precision and a faster return to daily activities. Additionally, the findings support the adaptation and skill development of aesthetic plastic surgeons in this emerging field.

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**Do you have any disclosures?** No

**Abstract No.:** 76

**Title :** Re-operations and revisions five years following breast augmentation after massive weight loss - A population-based study including 817 cases and 7023 controls

**Introduction:**

Breast augmentation following massive weight loss (MWL) presents specific surgical and anatomical challenges, including tissue laxity, altered elasticity, and potential wound-healing impairments. These characteristics often necessitate modified techniques and implant choices. However, long-term data on surgical outcomes and revision rates remain scarce. This study aimed to evaluate the long-term frequency, timing, and indications for reoperations following primary breast augmentation in MWL patients compared with non-bariatric controls.

**Materials and Methods:**

This nationwide, population-based case-control study utilized prospectively collected data from the Scandinavian Obesity Surgery Registry (SOReg) and the Swedish Breast Implant Registry (BRIMP). The cohort included all women who underwent bariatric surgery between 2007 and 2022 and were later registered in BRIMP (n = 817). Matched controls (n = 3512) had undergone primary breast augmentation without prior bariatric surgery. Surgical and follow-up data were analyzed per breast. Statistical comparisons were performed using Mann-Whitney U and Fisher's exact tests with Bonferroni-Holm correction, and significance was set at p < 0.05.

**Results:**

A total of 1,634 MWL and 7,023 control augmentations were analyzed. The mean follow-up was 5.4 and 5.6 years, respectively. The reoperation rate was significantly higher in MWL patients than controls (9.4% vs. 7.1%, p < 0.001), and the time to first reoperation was shorter (1.5 vs. 2.3 years, p < 0.001). Implant malposition (20% vs. 11%) and rotation (9.5% vs. 3.1%) were more frequent among reoperated MWL patients. Rates of capsular contracture and implant removal were low and comparable between groups.

**Conclusions:**

Post-bariatric MWL patients experience higher and earlier reoperation rates following breast augmentation compared with controls, primarily due to implant malposition and shape-related concerns. Nonetheless, absolute complication frequencies remain low. These findings provide real-world, population-based evidence to guide surgical planning and patient counselling in this growing clinical population.

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**Abstract No.:** 154

**Title :** Aesthetic Meets Systemic: Breast Reduction Surgery Reduces Metabolic Disease Risk – Findings from 17,000 Matched Cases

**Introduction:**

Breast reduction mammoplasty is commonly performed for aesthetic and quality-of-life improvements. While the procedure is known to alleviate physical symptoms such as back and neck pain, shoulder grooving, and bra strap irritation, its long-term metabolic effects have not been thoroughly investigated. This study aimed to investigate whether breast reduction surgery is associated with a reduced risk of developing metabolic syndrome later in life, stratifying patients by BMI category at the time of surgery.

**Materials and Methods:**

We conducted a retrospective cohort study using TriNetX, a global database of electronic medical records encompassing more than 170 million patients from over 150 healthcare organizations. We selected healthy females aged 18-50 with no history of metabolic disorders. Patients were divided into three BMI categories: 18.25, 25.30, and 30.35, and underwent elective bilateral breast reduction. For each group, a matched control group of women who did not undergo surgery was generated using 1:1 propensity score matching (PSM) to control for demographic and clinical covariates. We analyzed the incidence of new diagnoses of metabolic syndrome and its components (diabetes, hypertension, dyslipidemia) over time.

**Results:**

After PSM, equal-sized cohorts of more than 17,000 patients were created. The most pronounced benefit was observed in the BMI 30-35 group, where breast reduction surgery was associated with significantly lower incidence of metabolic syndrome, diabetes, hypertension, insulin resistance, dyslipidemia, and chronic kidney disease compared to controls. Lower BMI groups showed modest differences.

**Conclusions:**

Breast reduction surgery may offer more than cosmetic and symptomatic relief—it may provide long-term health benefits, particularly for women with a BMI of 30-35. These findings suggest the procedure could play a preventive role in metabolic disease, adding a new clinical dimension to the traditionally aesthetic context of plastic surgery.

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**Abstract No.:** 223

**Title :** Impact of Gel Cohesiveness and Implant Envelope Design on Silicone Bleeding in Breast Implants: A Multicenter Study

**Introduction:**

Since the 1960s, breast implant evolution has focused on gel cohesiveness and envelope characteristics including surface texturing. While manufacturers promoted increased gel cohesiveness to reduce silicone leakage, various envelope textures emerged, sparking ongoing debates. This study examines how gel cohesiveness and envelope design influence silicone bleeding in periprosthetic capsules.

**Materials and Methods:**

This multicenter retrospective study analyzed periprosthetic capsules from implant removal or exchange procedures. Each capsule was evaluated for gel cohesiveness and envelope type across Allergan®, Mentor®, and Motiva® brands.

**Results:**

Cohesivity  
Twenty-five capsules from Allergan® implants, seventeen from Mentor®, and five from Motiva® were analyzed. Allergan® and Mentor® capsules contained approximately 2 million particles regardless of gel generation, while Motiva® capsules contained about 100,000 particles.

Allergan®  
• Cohesivity I: 30particles/mm³(average size:32.37µm)  
• Cohesivity II: 74particles/mm³(average size:32.58µm)  
• Cohesivity III: 43particles/mm³(average size:2µm)

Mentor®  
• Cohesivity I: 131particles/mm³(average size:25.05µm)  
• Cohesivity II: 27particles/mm³(average size:25.98µm)

Motiva®  
• Cohesivity I: 1particle/mm³(average size:35.8 µm)  
• Cohesivity II: 5particles/mm³(average size:21.54 µm)

**Envelope**

Eighteen implants featured a Biocell® texture and seven smooth surfaces for McGran®/Allergan®, eleven Siltex® and twenty smooth for Mentor®, as well as five SilkSurfacePlus® for Motiva®. The capsules of Biocell® implants contained the highest number of silicone particles (3 million; size:39.81 µm). The smooth implants of the same brand contained about 170,000 particles (size:42.77µm). Siltex® silicone implants had approximately 1.5 million particles (size:23.97µm), while the smooth ones contained about 2.5 million (size:25.77µm). Siltex® saline implants had about 200,000 particles (size:22.51µm), whereas the smooth saline ones contained no particles. SilkSurface Plus® implants contained approximately 100,000 particles (size:25.11µm).

**Conclusions:**

Gel cohesiveness does not significantly influence silicone leakage within brands. Envelope design emerges as the primary determinant of silicone containment. Macrotextured surfaces compromise envelope integrity, while manufacturer-specific barrier technologies create distinct diffusion patterns, suggesting envelope engineering should be prioritized over gel formulation.

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**Abstract No.:** 246

**Title :** Enhancing Gluteal Contour in Circumferential Lower Body Lift: A Composite Approach with the Dermal-Fat Flap

**Introduction:**

After massive weight loss, circumferential lower body lift (CLBL) and autologous gluteal augmentation are commonly performed to restore body contour. However, in this patient population, reduced gluteal projection and compromised tissue quality often limit aesthetic outcomes. Fat grafting is widely used for gluteal volume enhancement, yet partial graft resorption may lead to progressive volume loss. This study aims to compare patient-reported satisfaction and clinical outcomes of gluteal contour restoration using a dermal-fat flap combined with fat grafting versus fat grafting alone in massive weight loss patients.

**Materials and Methods:**

A retrospective analysis was conducted on 37 female patients who underwent CLBL with gluteal augmentation between 2022 and 2025. Patients were divided into two groups: Group 1 (n=16, Composite Approach): A dermal-fat flap was inset as an autologous prosthesis to reconstruct and support upper pole projection. Autologous fat grafting (mean 650 ±85 cc) was then performed to refine lower pole contour. Group 2 (n=21, Fat Grafting Alone): Fat grafting (mean 825 ±120 cc) was applied to all gluteal subunits.

All fat transfers were performed under ultrasound guidance. Patient satisfaction was assessed using a digital visual analog scale (VAS, 0-10).

**Results:**

Operative time was longer in Group 1 (p < 0.05). A significantly lower graft volume was required in the composite group (p < 0.05). No major complications occurred. Despite the lower graft volume, Group 1 showed significantly higher satisfaction scores (VAS 8.9 ±0.7) compared with Group 2 (VAS 7.3 ±1.1) (p < 0.05).

**Conclusions:**

Composite gluteal augmentation using a dermal-fat flap and fat grafting during CLBL provides higher patient satisfaction despite reduced graft volume. The flap provides structural support and contour stability that appear more influential on perceived aesthetics than volume alone. This composite approach is a safe, reliable, and effective option for optimizing gluteal contour in massive weight loss patients.

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**Do you have any disclosures?** No

**Abstract No.:** 292

**Title :** Evaluation of Behaviours Based on Cyberchondria in Decision Making Processes in Aesthetic Plastic Surgery Procedures

**Introduction:**

The phenomenon of cyberchondria is characterised by an elevated level of health anxiety arising from an excessive consumption of online health information. There are few studies on this in plastic surgery, which is a concern . The objective of this study was to examine the association between cyberchondria and the inclination for cosmetic surgery and procedures among patients attending the plastic surgery outpatient clinic. In the study, the Cyberchondria Severity Scale (CSS) was utilised to examine the association between cyberchondria and the seeking of cosmetic surgery and procedures. This was undertaken in conjunction with the evaluation of patients' socio-demographic characteristics and internet usage habits.

**Materials and Methods:**

The present prospective cross-sectional study was conducted in plastic surgery outpatient clinic, with approval being granted by the Non-interventional Clinical Research Ethics Committee of our institution. The 463 patients included in the study were grouped according to the reasons for their visits to the clinic: surgical procedures, non-surgical procedures. The severity of cyberchondria was assessed using the Cyberchondria Severity Scale-12 (CSS-12). The national validated version of the CSS-12 was used in this study, and internal reliability was evaluated using Cronbach's alpha (α = 0.89), confirming excellent internal consistency.

**Results:**

Patients requesting surgery had higher scores (29.8 ± 7.5) than those requesting nonsurgical procedures (27.9 ± 7.2; t(451) = 2.87, p = 0.004). Multiple linear regression analysis identified three significant independent predictors of higher CSS-12 scores: surgical procedure preference (β = 0.21, p = 0.001), daily internet use (hours/day) (β = 0.25, p < 0.001), and health-information searching online (β = 0.18, p = 0.007). The model explained 27% of the variance and was statistically significant. Younger age was associated with higher cyberchondria.

**Conclusions:**

The findings of this study demonstrate decision-making between the digital behaviour, seeking of health information, and decision-making processes involved in aesthetic plastic surgery procedures.

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**Do you have any disclosures?** No

**Abstract No.:** 302

**Title :** Comparison of Reduction Mammoplasty Techniques: Arrow Flap versus Superomedial Pedicle

**Introduction:**

Reduction mammoplasty remains a common yet technically demanding procedure aimed at achieving functional and aesthetic improvement in patients with breast hypertrophy. Despite numerous surgical techniques, maintaining long-term upper pole projection and minimizing postoperative ptosis remain key challenges. This study compares the outcomes of the Arrow flap technique, a modification of the Lejour vertical scar approach, with the superomedial pedicle technique, focusing on aesthetic stability, complications, and patient satisfaction.

**Materials and Methods:**

A retrospective study was conducted on 180 patients undergoing bilateral reduction mammoplasty for moderate to severe hypertrophy between May 2018 and September 2024. Ninety patients were treated with the Arrow flap technique and ninety with the superomedial pedicle approach. Data were collected on demographics, operative details, resected tissue weight, and postoperative outcomes. Satisfaction and scar quality were evaluated using the BREAST-Q and SCAR-Q questionnaires, and aesthetic outcomes were assessed by independent surgeons at 12 months postoperatively.

**Results:**

The mean age was 42.3 years (range 19-69). The Arrow-flap group showed superior lower pole shaping and longer-term upper pole projection ("double-bra effect"), with comparable minor complication rates and no nipple-areolar complex necrosis. BREAST-Q scores demonstrated higher patient satisfaction in the Arrow flap cohort, particularly regarding physical well-being and breast appearance. SCAR-Q scores indicated no significant differences in scar perception between techniques.

**Conclusions:**

Both the Arrow-flap and superomedial pedicle techniques are safe and effective for reduction mammoplasty. However, the Arrow flap approach provides improved long-term shape maintenance and projection, making it a reliable choice for moderate to severe hypertrophy.

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**Abstract No.:** 396

**Title :** Geometry of Round and Anatomical Breast Implants: Where to Locate the IMF During Breast Augmentation

**Introduction:**

Breast augmentation remains one of the most frequently performed cosmetic surgical procedures worldwide. Regardless of implant type—round or anatomical—the positioning of the inframammary fold (IMF) plays a crucial role in determining the final aesthetic result, particularly regarding lower pole shape, symmetry, and scar concealment. This study introduces and validates a novel geometrical approach to IMF positioning, aiming for a consistent and reproducible method applicable to a wide range of cases.

**Materials and Methods:**

Over 300 female patients undergoing primary breast augmentation were included in this study. The implants used ranged from moderate to high projection, with both round and anatomical shapes. Surgeries were performed by a single experienced surgeon using either an inflammatory, axillary, or periareolar approach. The proposed model relies on implant dimensions—primarily width, maximal projection and profile ratio—and on patient's morphometry to determine the ideal IMF location. We incorporate the implant profile ratio as a key variable in the choice of the implant that would naturally meet the chest wall, thereby establishing the ideal fold position.

**Results:**

The geometrical model provided a consistently accurate IMF position across implant types and patient morphologies. In 92% of cases, the fold position aligned with the natural curvature of the implant once in place. Compared to traditional methods, the model resulted in: better IMF placement, improved lower pole fullness and shape, reduced rate of bottoming out or malposition, better symmetry, particularly in anatomical implants.

**Conclusions:**

The IMF plays a pivotal role in the aesthetics and outcome of breast augmentation surgery. Our study introduces a reliable, geometry-based model for determining the IMF location based on implant shape and size, rather than arbitrary or fixed distances. This unique method has been validated over hundreds of cases and has demonstrated superiority in accuracy and consistency compared to traditional approaches. Its application can be useful in cases involving anatomical implants or unconventional dimensions.

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# SESSION 9

## THE FABULOUS FACE



**Abstract No.:** 59

**Title :** Generational Motivations for Aesthetic Procedures: A Cross-Sectional Multinational Study Comparing Boomers, Gen X, and Millennials

**Introduction:**

This study examines generational differences among aesthetic patients in six countries (Brazil, Canada, Chile, Colombia, Italy, Switzerland) regarding their reasons for undergoing procedures, beliefs about early preventive treatment, the influence of social networks, appearance-related distress, expectations, and openness to sharing results on social media.

**Materials and Methods:**

A multinational cross-sectional survey was conducted from January to April 2025. Participants (Baby Boomers, Generation X, and Millennials) completed questionnaires on demographics, motivations, and attitudes, including the FACE-Q patient-reported outcome scales for facial appearance satisfaction and psychosocial well-being.

**Results:**

A total of 1,236 patients (mean age 44.3 ± 12.7 years; 88% female) participated. Distinct generational patterns emerged. Baby Boomers (ages ~59-77) predominantly sought rejuvenation to "turn back the clock" and remain competitive, preferring established noninvasive treatments, whereas Generation X (43-58) favored natural-looking enhancements for self-confidence and work-life balance. Millennials (27-42) were often driven by self-improvement and preventive "prejuvenation" goals, heavily influenced by social media beauty ideals. Millennials showed the highest agreement (73) that starting treatments early helps maintain youth, echoing a broader trend toward preventive aesthetics. Social network influence was reported as significant by 64% of Millennials versus 37% of Boomers. Appearance distress scores were highest in younger patients, with Millennials reporting more dissatisfaction with features and anxiety about aging, while Boomers were more accepting of age-related changes. Despite high post-procedure satisfaction across all groups, Millennials had slightly higher FACE-Q psychosocial scores improvement. Expectations also differed: Boomers largely desired subtle, "natural" results, Gen X sought balanced refinements, and some Millennials envisioned transformative changes shaped by celebrity images. Finally, 58% of Millennials were willing to share their cosmetic journey on social media, compared to only 18% of Boomers.

**Conclusions:**

These findings underscore the importance for plastic surgeons and cosmetic doctor to tailor consultations and treatment plans to generational values and expectations, which may enhance patient satisfaction and outcomes.

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**Abstract No.:** 63

**Title :** Scalpel versus Electrocautery for Upper Lateral Cartilage Contouring in Dorsal Preservation Rhinoplasty: A Retrospective Comparative Study

**Introduction:**

Dorsal preservation rhinoplasty maintains dorsum integrity while refining nasal aesthetics, but dorsal hump recurrence is a common limitation, especially after extensive reshaping. Electrocautery offers precise cartilage contouring, yet its role in dorsal preservation rhinoplasty is under-investigated. To compare the outcomes of scalpel-based mechanical reshaping versus electrocautery-assisted thermal reshaping of the upper lateral cartilage shoulders in low septal strip dorsal preservation rhinoplasty.

**Materials and Methods:**

This retrospective study included 205 patients who underwent low septal strip dorsal preservation rhinoplasty via open approach between February 2021 and May 2023. Patients were grouped according to the method used for reshaping the upper lateral cartilage: Group I underwent mechanical reshaping with a scalpel (mechanical/scalpel group), and Group II underwent thermal reshaping using monopolar electrocautery (thermal/electrocautery group). Dorsal hump recurrence and patient-reported outcomes were evaluated using standardized 12-month postoperative photographs and the Rhinoplasty Outcome Evaluation (ROE) questionnaire, respectively.

**Results:**

A total of 88 patients were included in the scalpel group and 117 in the electrocautery group. Demographic data, hump morphology, and amount of hump reduction were similar between groups. However, the recurrence rate of the dorsal hump was significantly lower in the electrocautery group (2.5%) compared to the scalpel group (13.6%). ROE scores were high in both groups (84.4 vs. 85.0, p<0.05).

**Conclusions:**

Electrocautery-assisted upper lateral cartilage reshaping in dorsal preservation rhinoplasty offers more consistent contouring and reduced recurrence rates compared to scalpel-based technique. It represents a valuable technical adjunct, especially in cases with challenging dorsal anatomy.

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**Abstract No.:** 80

**Title :** Preservation Concepts in Secondary Rhinoplasty: Is There Any Role?

**Introduction:**

Secondary rhinoplasty presents complex challenges due to anatomical distortions, scar tissue, and multiple iatrogenic deformities. Although a traditional structural approach is the time-honored benchmark against which any other technique should be measured, preservation concepts can be integrated together with structural techniques. The aim of this study is to address the question of whether and where Preservation concepts, including a) dissection planes b) pushdown-letdown concepts c) preservation-reconstruction of tip ligaments, have significantly changed the authors' approach to secondary rhinoplasty cases, within the frame of a technique that remains prevalently structural under a full open approach.

**Materials and Methods:**

This study is based on a retrospective review of cases. Preservation concepts applicable to secondary rhinoplasty are outlined in detail. A paradigm case highlighting the strategic application of preservation techniques is included.

**Results:**

Preservation concepts pose an evident advantage in avoiding unnecessary dissection, further destabilization, and overgrafting while maintaining native structures that can be preserved and limiting dead space. Some of the preservation concepts applied were maintaining or modifying the septal T using "modified dorsal split" or "let down" techniques, use of middle strip let down to close septal fistula, utilize scar tissue, rather than being fully excised, to reshape and to mimic ligaments, support tip definition, or smooth cantars. However, introducing a "preservatist mindset" in revision rhinoplasty needs a refined approach, mastery of diverse techniques and a flexible operative strategy.

**Conclusions:**

Preservation concepts can lead to improved outcomes even in secondary rhinoplasty

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**Abstract No.:** 110

**Title :** Reversing Facial Aging through Three-Dimensional Skeletal Expansion by Multi-planar Distraction Osteogenesis

**Introduction:**

Facial aging involves loss of youthful contour due to significant resorption of the skeletal foundation, changes in the retaining system of ligaments and fascia, leading to changes in fat compartments, weakened mimic muscle activity and soft tissue envelope laxity. The midface (maxilla, pyriform region) and the prejowl area of the mandible are particularly predisposed to resorption, contributing to the stigmata of the aging face. Correction of this involuted skeletal framework is essential for achieving natural and harmonious rejuvenation. Classical orthognathic surgery repositions the facial skeleton but produces abrupt volumetric change. In contrast, distraction osteogenesis (DO) enables gradual three-dimensional skeletal expansion through controlled tension-induced bone formation and adaptive remodeling of the overlying soft-tissue envelope. Originally developed for craniofacial reconstruction, distraction osteogenesis has potential in esthetic facial skeletal surgery to achieve results beyond classical techniques.

**Materials and Methods:**

We present 15 patients who underwent esthetic skeletal surgery integrating DO. Case selection was guided by esthetic goals. Reverse planning began with the targeted final facial form driving the details of multiple osteotomies to allow 3D vector-driven multiplanar expansion with internal devices. The rate of distraction was 0.3 to 0.7 mm/day, from 14 to 35 days, followed by a consolidation 12 to 16 weeks.

**Results:**

Gradual expansion facilitated tissue-matrix biomechanical adaptation across all planes, leading to relocation of fat compartments, muscle regeneration, and skin tension relaxation. This skeletal expansion effectively drove soft-tissue expansion, resulting in composite skeletal-soft-tissue rejuvenation and a stable equilibrium. Skeletal and soft tissue analysis to be presented

**Conclusions:**

The gradual nature of the expansion allowed for biological and neuromuscular adaptation over time, setting a new, more stable equilibrium within the redefined biologic boundary. Based on clinical experience, when applied with careful selection and planning, can achieve superior and long-term stable esthetic and functional results, effectively reversing skeletal and soft tissue aging via controlled, 3D volumetric expansion.

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**Do you have any disclosures?** No  
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**Abstract No.:** 111

**Title :** Endoscopic Retro-Orbicularis Oculi Fat Transposition for Structural Restoration of the Sunken Eyelid

**Introduction:**

The periorbital region is particularly prone to age-related structural alterations, leading to sunken eyelid deformities characterized by upper eyelid hollowing and prominent orbital margins. Conventional treatment options, including dermal fillers and fat grafting, often fail to deliver predictable and durable outcomes. This retrospective study presents endoscopic Retro-Orbicularis Oculi Fat (ROOF) transposition as a novel and reliable technique for correcting sunken eyelid deformities and restoring lateral orbital convexity.

**Materials and Methods:**

Between January 2021 and January 2024, twenty-six patients (25 female, 1 male; mean age 34 years, range 24-44) with evident supraorbital rim prominence and no redundant upper eyelid skin underwent endoscopic ROOF transposition. The procedure was conducted through small scalp incisions under endoscopic guidance. Twenty-four patients also underwent concurrent conjunctiva-midface and temporal lifting, and two received forehead lifts. Pre- and postoperative images were analyzed at a 12-month follow-up.

**Results:**

Postoperative evaluations revealed significant improvements in eyelid contour and lateral orbital volume, with stable outcomes maintained throughout the follow-up period. Early postoperative swelling and bruising subsided within one week. No contour irregularities or complications were observed, and patient satisfaction was rated from good to excellent.

**Conclusions:**

Endoscopic ROOF transposition represents a minimally invasive and effective approach to correcting sunken eyelid deformities, achieving long-lasting results without donor-site morbidity. The technique can be safely combined with other endoscopic facial rejuvenation procedures, although it demands surgical expertise and offers limited correction for medial orbital hollowing.

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**Abstract No.:** 241

**Title :** ENDOSCOPIC DEEP-PLANE FACELIFT OF THE FOREHEAD AND MIDDLE THIRD

**Introduction:**

Facial ageing is a complex process. For years, surgical rejuvenation has involved skin resection and SMAS tightening. Recent innovations in this field include the deep plane facelift, which has a more positive effect on facial volume. In contrast to traditional open techniques, endoscopic techniques enable the restoration of facial volume in a natural manner without external visible scars or skin resection.

This study presents the technical approach and outcomes of endoscopic deep-plane rejuvenation of the forehead and mid-third.

**Materials and Methods:**

We performed a retrospective review of all patients treated with deep-plane endoscopic facelift of the forehead and mid-third for facial rejuvenation over the last 10 years. The compiled data included demographics, the type of procedure (areas treated), complications, and patient and surgeon satisfaction.

The surgical technique is performed through small incisions in the temporal (3 cm) and mid-frontal (1.5 cm) areas of the scalp under direct endoscopic control. The temporal and frontal access points are used to access the forehead, mid-face, and lower face. In the forehead, a subperiosteal route is used, and in the rest of the face, a supraperiosteal route is used. All ligaments are identified and repositioned, and all facial compartments are lifted.

**Results:** One hundred patients were included in the study. The follow-up period ranged from 1 to 9 years. The aesthetic results were rated as excellent or very good by 97% of patients and 100% of surgeons. Complications included four neuropraxias of the frontal branches, which resolved completely spontaneously. Two patients presented with a small sialocele that required botulinum toxin treatment.

**Conclusions:**

Endoscopic deep-plane facelift procedures for the forehead and the middle third of the face produce natural and effective rejuvenation. With endoscopic control, all areas of the face can be treated with consistent results. Side effects and complications are minor and uncommon.

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**Abstract No.:** 259

**Title :** The Influence of Pitanguy Ligament on the supra tip break point in open rhinoplasty

**Introduction:**

The supratip breakpoint is paramount in nasal aesthetics. "Polly beak deformity" refers to a swollen supra tip, which poses significant aesthetic concerns. The Pitanguy ligament facilitates tissue attachment and helps control fibrosis. This study investigates the impact of Pitanguy ligament repair on supratip depth during open rhinoplasty.

**Materials and Methods:**

This retrospective study conducted between May 2019 and July 2023 included 120 patients. Divided into three groups, each comprising 40 patients: Group I (No Touch Group): The Pitanguy ligament remained untouched. Group II (Excision Group): The Pitanguy ligament was excised. Group III (Repair Group): The Pitanguy ligament was sutured to the highest point of the caudal septum. Patient photographs were taken at the 3rd and 12th months post-operation. Supratip area depth was measured using Adobe Photoshop software. Changes in the supra tip breakpoint depth at 3 and 12 months, along with a comparison of the 12-month supra tip depths among the groups, were conducted.

**Results:**

The study included 120 patients (96 females and 24 males. Group II exhibited statistically significant differences when comparing the changes between Group 2 and 12 months postoperatively (p<0.05). By the 12th month, the depth of the repair group (Group III) significantly exceeded that of the other groups (p<0.05).

**Conclusions:**

This study demonstrates that performing Pitanguy repair in open rhinoplasty techniques significantly enhances supra tip depth and prevents pollybeak deformities.

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**Abstract No.:** 262

**Title :** Clinical Implications of Pitanguy Ligament Management for Nasal Tip Contouring in Open Versus Closed Rhinoplasty

**Introduction:**

Precise contouring and control of the nasal tip are critical for rhinoplasty success. Tip projection and rotation, largely dependent on the lower lateral cartilages (LLCs), septum, and ligamentous attachments, shape aesthetic concerns. Postoperative edema and supratip deformity may hinder results by preventing skin adaptation. Management options include preserving or repairing the Pitanguy ligament or relying on grafts/supportive. Debate remains over which factor—ligamentous or cartilagenous—plays the dominant role. This study compared short- and long-term outcomes of open and closed rhinoplasty with different Pitanguy ligament strategies.

**Materials and Methods:**

A retrospective study of 120 patients undergoing primary rhinoplasty (April 2022-April 2024) was conducted. Exclusion criteria were prior rhinoplasty, fillers, cleft deformity, alar base reduction, or loss of stable cartilaginous support. Patients were divided equally: Group I, open rhinoplasty without ligament repair; Group II, open with ligament repair; Group III, closed with ligament preservation. All received septoplasty with septal extension grafts, osteotomies, and tip refinement. Standardized photographs were taken preoperatively, immediately post-op, and at 1 and 12 months. Outcomes included supratip definition, edema, depth, nasolabial angle, tip projection (Goddé method), and Rhinoplasty Outcome Evaluation (ROE) scores.

**Results:**

Groups were similar in demographics. Group I had significantly lower supratip depth postoperatively and at 1 month compared to Groups II and III (p<0.01), but differences disappeared by 12 months. Supratip definition improved and edema decreased significantly in all groups over time (p<0.001). Group III showed greater nasolabial angles than Group I at all follow-ups (p<0.05). Group I had higher immediate projection than Group III (p<0.008), but values converged by 1 year. ROE scores increased significantly across groups (p<0.001).

**Conclusions:**

Ligament preservation or repair improves early supratip contour, while long-term results rely mainly on stable cartilaginous support. Both open and closed techniques with strong framework provide satisfactory aesthetic and patient-reported outcomes.

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**Abstract No.:** 393

**Title :** Bony Structure: Outcomes of Revision Rhinoplasty Using Autologous vs. Cadaveric Costal Cartilage

**Introduction:**

Revision rhinoplasty remains one of the most demanding procedures in facial plastic surgery, often requiring structural grafts when septal or auricular cartilage is unavailable. Autologous and cadaveric costal cartilage represent the main sources for major reconstructions; however, comparative data on patient-reported outcomes remain limited. This multicenter study compares aesthetic and functional results from the patient's perspective following revision rhinoplasty using either autologous or cadaveric rib cartilage.

**Materials and Methods:**

Thirty patients undergoing open revision rhinoplasty between 2019 and 2024 were retrospectively analyzed. Group I (n = 15) received autologous rib cartilage, and Group 2 (n = 15) received cadaveric rib cartilage. Patient-Reported Outcome Measures (PROMs) were assessed using the FACE-Q Rhinoplasty Module for all participants and the SCAR-Q for donor-site evaluation in Group 1. Additionally, overall aesthetic results were rated using a Visual Analogue Scale (VAS, 0-5) by two independent plastic surgeons not involved in the procedures.

**Results:**

Both groups achieved high postoperative satisfaction and functional improvement. FACE-Q analysis showed significantly higher scores in the autologous group for nostril appearance, surgical decision, and early life impact. No significant differences were found across other domains. SCAR-Q results revealed minimal donor-site morbidity, with mean scores > 90 in appearance, symptom, and psychosocial impact domains. VAS evaluations showed higher mean scores for the autologous group, confirming superior aesthetic outcomes as judged by independent observers. No major complications, infections, or graft resorptions occurred in either cohort.

**Conclusions:**

Both autologous and cadaveric rib cartilage are safe and reliable materials for structural grafting in secondary rhinoplasty. Cadaveric grafts eliminate donor-site morbidity, while autologous cartilage offers superior biocompatibility, long-term stability, and additional fascia or perichondrium for complex reconstructions. Patient tolerance of the rib-harvesting scar was excellent, reinforcing autologous costal cartilage as the preferred option when feasible.

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